This Issue Exceeds 102,800 Copies

THE JOURNAL

OF THE

American Medical Association

Subscription, $8.00 | PUBLISHED WEEKLY | Single Copies, 25 Cents

VOLUME 117, No. 15

COPYRIGHT, 1941 BY AMERICAN MEDICAL ASSOCIATION

535 North Dearborn Street, Chicago, Ill.

OCTOBER 11, 1941

Medical Library

CONTENTS AND SUBJECT INDEX

Resection of the Kidney: Chairman's Address. Meredith F. Campbell, M.D., New York.....1223

Infusions of Blood via the Bone Marrow. L. M. Tocantins, M.D.; J. F. O'Neill, M.D., and H. W. Jones, M.D., Philadelphia.....1229

The Splinting of Compound Fractures. Frank J. Cox, M.D., New Orleans 1234
Discussed by Drs. Swart and Cox.

Oxygen Tent Therapy in the Treatment of Eclampsia. Roy E. Nicodemus, M.D., Danville, Pa. ...1238
Discussed by Drs. Montgomery and Nicodemus.

Synthetic Estrogen Diethylstilbestrol. Cyril M. MacBryde, M.D.; Dante Castrodale, M.D.; Ellen Loeffel, M.D., and Harold Freedman, M.D., St. Louis.....1240

The Effect of Estrogens on the Microscopic Appearance of the Liver. Robert S. Teague, M.D., New York 1242

The Strength of Digitalis in Clinical Use: A Warning. E. F. Bland, M.D., and Paul D. White, M.D., Boston 1243

Maternal Pulmonary Embolism by Amniotic Fluid as a Cause of Obstetric Shock. Paul E. Steiner, M.D., and C. C. Lushbaugh, B.S., Chicago 1245

The Present Status of the Immediate Tellurite Test for Diphtheria. H. R. Bierman, M.D., and R. W. Maxwell, M.D., St. Louis.....1255

CLINICAL NOTES

Bromide Intoxication of Unusual Severity and Chronicity Resulting from Self Medication with Bromo-Seltzer. Paul C. Bucy, M.D., Chicago; Thomas A. Weaver, M.D., Cincinnati, and Edward H. Camp, M.D., Chicago 1256

Pheochromocytoma: Correct Diagnosis and Successful Operation. Frederick K. Heath, M.D.; George F. Cahill, M.D., and Dana W. Atchley, M.D., New York.....1258

SPECIAL ARTICLE

Importance of Clothing in Air Conditioning. C. P. Yaglou, M.S., and Anne Messer, A.B., Boston...1261

COUNCIL ON PHYSICAL THERAPY

Amputations: Rehabilitation....1262

COUNCIL ON PHARMACY AND CHEMISTRY 1264

EDITORIALS

Weil's Disease.....1266

A Prize Contest and Garlic....1267

Respiratory Infections.....1268

CURRENT COMMENT

Needs of Army Medical Library.1268

Convalescent Serum.....1269

Propaganda Analysis.....1269

"Alas, Poor Yorick! I Knew Him, Horatio" 1269

COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

Continuation Courses.....1285

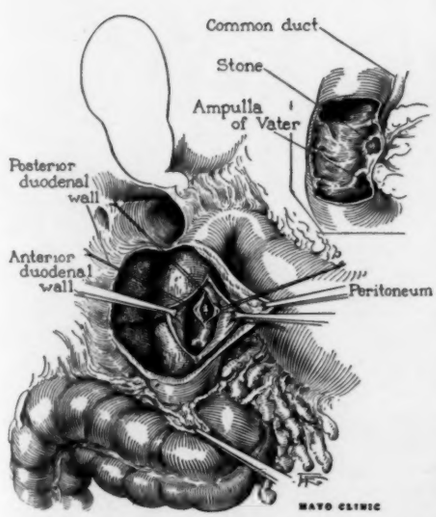
BUREAU OF LEGAL MEDICINE AND LEGISLATION 1288

(Subject Index on next page)

MEDICAL PREPAREDNESS 1270

ORGANIZATION SECTION 1273

A. M. A. SESSION ATLANTIC CITY JUNE 8-12, 1942



Transduodenal Removal of Stone in Ampulla.

(This illustration is shown here in approximately one-half its actual size in the book.)

Walters and Snell on Gallbladder Diseases

In detail of illustrations as well as of text, this great book from the Mayo Clinic is of unsurpassed excellence. It contains *342 magnificent illustrations* on 195 figures and 6 color pictures—every one a sharp portrayal of significant diagnostic facts or the step-by-step technic of an important operation or other procedure. The illustration at the left, which has been *reduced* to approximately one-half size for this advertisement, is an example of the many vivid line-drawings.

From diagnosis on through postoperative care this book gives a decidedly complete coverage of biliary diseases. It is *both medical and surgical* and details the selfsame methods that the authors are finding most successful in treating thousands of patients at the Mayo Clinic.

By WALTMAN WALTERS, M.D., Head of Section in Division of Surgery, the Mayo Clinic; Professor of Surgery, the Mayo Foundation (University of Minnesota); and ALBERT M. SNELL, M.D., Head of Section in Division of Medicine, the Mayo Clinic; Professor of Medicine, the Mayo Foundation. 645 pages, 6" x 9¼", with 342 illus. on 195 figs. $10.00.

See SAUNDERS ADVERTISEMENT—Page 3

SUBJECT INDEX TO THIS ISSUE

The letters used to explain in which department the matter indexed appears are as follows: The Star (*) indicates an Original Article; "ab," abstract; "E," Editorial; "C," Correspondence; "MI," Medicolegal; "ME," Medical Economics; "OS," Organization Section; "SS," Student Section.

A. M. A. Committee to Study Air Conditioning, seventh report....*1261
data on continuation courses....*1285
Abdomen tuberculosis in children....ab-1302
Academy of Medicine, N. J....1275
Acid-base balance vs. opium....ab-1301
Acne, androgens cause....ab-1293
Addison's Disease: treatment; prognosis.ab-1290
Adrenals, pheochromocytoma....*1258
Air conditioning and clothing....*1261
Albright, Fuller, to lecture....1274
Allimin for hypertension....E-1267
Amenorrhea, diethylstilbestrol for....*1240
Amniotic Fluid, pulmonary embolism by..*1245
Amputation, rehabilitation after....*1262
Anaphylaxis, reactions with fungi....ab-1302
Androgens, role in acne....ab-1293
Anemia, intramedullary infusions in....*1230
paralytic, liver extract for....ab-1299
pernicious, erythrocyte autoagglutination.1308
Anesthesia, anoxia in....ab-1292
cocaine locally, by Koller in 1884....C-1284
spinal, and circulation....ab-1299
Aorta, stenosis of isthmus....ab-1298
Appendicitis, acute, frequency of....ab-1299
acute, residual blood nitrogen in....ab-1302
acute, sedimentation test in....ab-1295
Appendix, carcinoid....ab-1300
Army Medical Library needs....E-1268
Arnold-Chiari Syndrome....ab-1294
Arteries, coronary occlusion, shoulder-hand disability in....ab-1289
Arteriosclerosis, peripheral....ab-1289
Association News....1273
Atrophy, muscular....1306
Blood, bromide in bromidism....*1256
bank in Asheville....1276
changes after splenectomy....ab-1290
circulation and spinal anesthesia....ab-1299
gases, opium affects....ab-1301
hypoprothrombinemia in newborn....ab-1298
in dementia paralytica....ab-1299
intramedullary infusions....*1229
nitrogen in appendicitis and adnexitis.ab-1302
pressure, high, Allimin for....E-1267
pressure, high, paroxysmal attacks in pheochromocytoma....*1258
pressure, high, thiocyanate for....ab-1296
sedimentation test in appendicitis....ab-1295
spontaneous hypoglycemia....ab-1296; ab-1300
Board Examinations....1287
Bone Marrow, infusions via....*1229
Book Notices....1303
Books Received....Adv. page 44
Brain, prefrontal leukotomy...ab-1297; ab-1298
hemorrhagic leukoencephalitis....ab-1298
Breast, lumpy: milker's nodules....1307
Brinkleys use mails to defraud....E-1269
Bromo-Seltzer, severe intoxication....*1256
Bronchopneumonia, intramedullary infusions in....*1230
Bureau of Investigation....1281
Bureau of Legal Medicine and Legislation.1288
Burns, intramedullary infusions....*1230
silk envelop method for....ab-1297
three dye treatment....1308
Cancer, butter yellow, and cystine....ab-1301
Carbon tetrachloride poisoning....1307
Cephalin-cholesterol flocculation test....ab-1292
Cholesteatoma in ear....ab-1302
Chorea minor, intraspinal autoserum for.ab-1302
Chromium, ulcers of nose and throat....ab-1294
Clothing, men's vs. women's....*1261
Coon, H. M., succeeds Dr. Buerki....1277
Correspondence....1283
Council on Medical Education and Hospitals.1285
Council on Pharmacy and Chemistry....1264
Council on Physical Therapy....1262
Cranium, Arnold-Chiari malformation...ab-1294
Cross, R. A., retained....1274
Cystine and butter yellow cancer....ab-1301
Deaths....1280
Dementia Paralytica, blood in....ab-1299
Dementia Praecox, prefrontal leukotomy....ab-1297; ab-1298
Denny-Brown, D. E., Harvard appoints...1275
Digitalis, U. S. P. XI, increased potency.*1243
Diphtheria, immunization, Argentina....1279
in immunized vs. nonimmunized....ab-1298
Manzullo potassium tellurite....*1255
outbreaks in migrants....1275
Ductus Arteriosus, first surgery on....C-1284
Ear, cholesteatoma in....ab-1302
Eclampsia, oxygen tent therapy....*1238
Embolism, pulmonary, by amniotic fluid..*1245
Empyema, intramedullary infusions....*1230
Encephalitis, hemorrhagic leukoencephalitis....ab-1298
Endocarditis, influenzal type A....ab-1290
Epilepsy, psychomotor attacks....1308
Erythema multiforme and milker's nodules.1307
Erythroblastosis, intramedullary infusions.*1230
Erythrocytes, autoagglutination....1308
Estrogens, synthetic: diethylstilbestrol...*1240
effect on liver....*1241; *1242
therapy of hemorrhages....ab-1299
European War, hospital damage....1278
Medical Library Association aids damaged libraries....C-1283
milk as food....1278
war pensions: training disabled....1278
Femur, intramedullary infusions....*1229
Perthes' disease....ab-1300
Fluids, intramedullary infusions....*1229
Foreign Letters....1278
Fractures, compound, splinting of....*1234
compound, therapy....ab-1299
Freud and cocaine anesthesia....C-1284
Fungi, anaphylactic reactions....ab-1302
Garlic for hypertension....E-1267
Gastroenteritis, intramedullary infusions in.*1230
Gonads, hypogonadism, diethylstilbestrol in.*1240
Government Services....1277
Gross Lecture by Dr. Jones....1277
Hand, disability in coronary occlusion...ab-1289
"Health and the Doctors"....E-1269
Heart disease and U. S. P. XI digitalis..*1243
electrocardiogram in diphtheria....1279
hypertrophy, cor pulmonale....ab-1289
Hemorrhages, estrogen therapy....ab-1299
Hospital damage from air raids....1278
employees, end of strike....OS-1273
patient's rib fractured during operation....MI-1288
state, investigated, Utah....1277
Hyperthyroidism, recurrence....ab-1292
Industrial chrome ulcers....ab-1294
Infants, intramedullary infusions in....*1229
newborn, hypoprothrombinemia in....ab-1298
Influenza type A endocarditis....ab-1290
Insanity, prefrontal leukotomy.ab-1297; ab-1298
Insurance, British, physicians' pay in..OS-1273
Intestines tuberculosis in children....ab-1302
Jaundice, cephalin-cholesterol test....ab-1292
Weil's disease....E-1266
Jones, Thomas D., Gross Lecture by....1277
Keratoconjunctivitis sicca....1308
Kidneys, resection....*1223
Koessler Fellowship to Dr. Yanof....1274
Koller, Carl, used cocaine in 1884....C-1284
Labor, shock in, from pulmonary embolism by amniotic fluid....*1245
Libraries, British, losses....C-1283
Army Medical Library....E-1268
Liver cancer and millet feeding....ab-1301
cephalin-cholesterol flocculation test...ab-1292
estrogens effect on....*1242
function, diethylstilbestrol affects....*1241
Lungs in amniotic fluid embolism....*1245
in cor pulmonale....ab-1289
suppuration....ab-1302
Lymph Nodes, mesenteric tuberculosis...ab-1302
Manzullo tellurite test for diphtheria....*1255
Marriages....1279
Meconium, cause of pulmonary embolism..*1252
Medical Economic Abstracts....1273
Medical Education, continuation courses..*1285
Medical Examinations and Licensure....1287
Medical Library Association, aid to Britain; requests periodicals....C-1283
Medical Preparedness....1270
Army hospital rate....1270
assistant surgeons for Navy....1270
course in plastic surgery....1270
Dr. Eliot a liaison officer....1271
health of Army better than in 1917....1270
medical training battalions....1271
officers ordered to active duty....1271
public health in area of maneuvers, N. C..1276
School of Aviation Medicine new commandant....1271
Medicine, socialized, propaganda analysis.E-1269
Medicolegal Abstracts....1288
Meetings, Coming Meetings....1288
Menopause symptoms, diethystilbestrol for.*1240
Migrants, diphtheria in....1275
Milk as food....1278
Milkers' nodules....1307
Millet feeding and liver cancer....ab-1301
Needles for intramedullary infusion....*1232
Negro Health Center, Fla....1274
Nephritis, glomerular, intramedullary infusions in....*1230
Nevus, portwine....1308
New and Nonofficial Remedies....1264
News....1274
Northwestern University, merit awards....1274
Nose, chrome ulcerations....ab-1294
Nutrition of Americans....C-1283
Old Age, rectal prolapse in....1308
more aged and more producers....OS-1273
Opium, effect on blood....ab-1301
Organization Section....1273
Osteochondritis, Perthes' disease....ab-1300
Osteomyelitis, chronic, fill medullary canal with muscle flap....ab-1299
Oxygen, anoxia in surgery....ab-1292
tent therapy in eclampsia....*1238
Pancreas, necrosis (acute), treatment...ab-1301
Pellagra; therapy....ab-1299
Pennsylvania medical meeting canceled....1276
Peritonitis, therapy....ab-1295
Pharmacopeia, U. S. XI, digitalis....*1243
Pheochromocytoma of adrenal; x-ray diagnosis; successful operation....*1258
Physicians, continuation courses for....*1285
"Health and the Doctors"....E-1269
in compensation practice, Calif....OS-1273
ordered to active duty....1271
pay in British insurance....OS-1273
positions open, Calif....1277
wanted for Children's Bureau....1277
Pituitary and spontaneous hypoglycemia.ab-1300
Plague control recommendations....1277
denies eastward trend....C-1283
Pneumonia control program....1275
Poliomyelitis, convalescent serum for....E-1269
in New Brunswick....1277
symposium....1274
Potassium tellurite test for diphtheria....*1255
thiocyanate for hypertension....ab-1296
Propaganda Analysis, Inc....E-1269
Psittacosis epidemics, Argentina....1279
Psychosis, acute from Bromo-Seltzer....*1256
Puerperium, pulmonary embolism by amniotic fluid....*1245
Pylorus stenosis, intramedullary infusions in....*1230
Queries and Minor Notes....1307
Rectum prolapse in elderly....1308
Red Cross, Pan American Conference....1279
Rehabilitation after amputations....*1262
Reinartz, Eugen G., new commandant....1272
Respiratory Tract infections, control of..E-1268
Roentgen Ray diagnosis of adrenal pheochromocytoma....*1258
dosage, sea urchin sperm in....ab-1301
Room temperature in air conditioning....*1261
Royal College of Surgeons president....1278
Salvarsan, anniversary of....1276
Sciatica, spinal fluid in....ab-1300
Seaman Fund available....1276
Shoulder disability in coronary occlusion.ab-1289
Society Proceedings....1288
Sodium chloride infusions via bone marrow.*1229
Spine, Arnold-Chiari malformation....ab-1294
Splenectomy, hematologic changes after.ab-1290
Splinting of compound fractures....*1234
State Board Examinations....1287
Stewart, John D., made professor....1275
Still, Sir Frederic, death....1278
Stomach, phlegmonous gastritis....ab-1291
Sulfanilamide for peritonitis....ab-1295
Surgery, anoxia in....ab-1292
plastic, course in....1270
Tears, solutions as substitute....1308
Tellurite test for diphtheria....*1255
Temperature in air conditioning....*1261
Throat, chrome ulcerations....ab-1294
Tibia, intramedullary infusions....*1229
Tonics and Sedatives....Adv. page 36
Trichinosis in New York City....ab-1290
Tuberculosis in persons who died of various diseases....ab-1291
pulmonary, tubercle bacilli in cavity drainage (Monaldi)....ab-1291
Twins, homologous, tumors in one....ab-1291
Typhoid, revaccination....1307
University of Chicago 50th anniversary symposium....E-1268
Ureter in kidney resection....*1227
Uterus, acute adnexitis, blood nitrogen in.ab-1302
Van Patten Pharmaceutical Co....E-1267
Vitamin K and hypoprothrombinemia...ab-1298
Webb-Johnson, Alfred, honored....1278
Weil's Disease....E-1266
Wilkinson, Chester A., name park for....1275
Workmen's Compensation and physicians in California....OS-1273
Wounds, silk envelop method for....ab-1297
Yanof, Zale A., Koessler Fellowship to....1274

THE JOURNAL of the American Medical Association is published weekly by the American Medical Association, 535 North Dearborn Street, Chicago, Ill. Subscription price, $8.00 a year. 25c a copy. Canadian $9.50. Foreign $12.00. Entered as second class matter June 25, 1885, at the Postoffice at Chicago, Ill., under Act of March 3, 1879.

BOOK BUYING SIMPLIFIED We supply new and standard medical works of all publishers
ONE ORDER—ONE REMITTANCE
GET OUR LATEST BULLETIN **CHICAGO MEDICAL BOOK CO.** 435 S. Honore St. CHICAGO

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 117, NO. 15 — COPYRIGHT, 1941, BY AMERICAN MEDICAL ASSOCIATION CHICAGO, ILLINOIS — OCTOBER 11, 1941

RESECTION OF THE KIDNEY

CHAIRMAN'S ADDRESS

MEREDITH F. CAMPBELL, M.D.

NEW YORK

As surgery has developed, the salvaging of functioning tissue has received increasing attention, and nowhere has this been more strikingly demonstrated than in the operative attack on the kidney. The parenchyma preserved by renal resection is both vitally precious and irreplaceable; it undergoes hypertrophy but not regeneration. The number of patients whose existence is attributable to renal parenchyma left by conservative resection is constantly growing. Developmental anomalies occur more often in the urinary tract than in any other system, and in at least 80 per cent of the cases subjected to renal resection the principal urologic disease involves an anomalous upper urinary tract. In most instances there is pelvic reduplication with one pelvis involved by hydronephrosis, usually infected and often complicated by stone. As a corollary, the discovery of resectable kidneys will be notably increased by greater accuracy in the diagnosis of anatomic structure and the finer localization of chronic urinary infections. This applies especially to the young and thus may the anatomic diagnosis be made early enough to permit salvaging of the sound segment of the diseased kidney, which later would almost certainly require nephrectomy.

INDICATIONS FOR RENAL RESECTION

Indications for renal resection may be tabulated as follows:

I. Normally formed kidney:

(*a*) Localized hydronephrosis due to obstruction of the calices and with or without infection or stone.

(*b*) Extension of large pelvic stone into a single calix.

(*c*) Solitary cyst or localized multilocular cystic disease.

(*d*) Benign neoplasm (rare).

(*e*) Certain cases of renal trauma with localized (polar) fragmentation or maceration and the remainder of the organ sound.

II. Anomalous kidney:

(*a*) Reduplicated pelvis with one sound pelvoparenchymal segment and the other diseased by hydronephrosis, infection or calculus associated with obstruction (chiefly stricture), infection or an ectopic opening of the corresponding ureter.

(*b*) Horseshoe kidney: 1. When the condition itself causes symptoms, chiefly pain, and in the absence of other disease.[1]

2. When the conditions indicated under II *a* involve half of the horseshoe kidney or, as in 3 of our cases (14, 37 and 38), involve a reduplicated pelvis on one side of a horseshoe kidney.

(*c*) Same as II *b* but for removal of the diseased renal segment in crossed ectopia, sigmoid, L, discoid or other forms of fusion anomaly.

III. In congenital or surgical solitary kidney with a resectable lesion. This includes the clinical equivalent in which the function of the opposite kidney is low (e. g. nephritis or congenital hypoplasia) but its removal is contraindicated.

Renal resection is not advised in renal carbuncle nor in apparently localized renal tuberculosis or neoplasm. Some carbuncles can be adequately drained or "cored out," but if not nephrectomy should be employed as in cases of tuberculosis and neoplasm. Yet I am aware that in rare cases of mild involvement violation of this rule may seem warranted, and perhaps even successfully, when the carbuncle, tuberculosis or benign growth is localized to an easily accessible and readily resectable renal pole. Kretschmer's[2] patient, a 10 year old boy, had a left renal carbuncle and a perirenal abscess; the renal lesion was resected. Shortly thereafter a similar lesion developed in the right kidney and was successfully treated by resection. But these are the exceptions which prove the rule.

Of the 41 patients who form the clinical background of this communication, 31 were operated on by me and were chiefly private patients; to this number are added 10 from the Urological Service of Bellevue Hospital who were operated on by seven surgeons during the past eighteen years. The adult patients from Bellevue have been included because they are largely in an older age group, are in a lower economic class and present extremely interesting conditions from the surgical point of view.

In these cases a good ureterographic demonstration is scarcely less important than a good pyelogram. The condition and course of the ureter will influence the choice of operative procedure, particularly as to the need of total ureterectomy. Often the entire ureter draining the diseased renal segment is dilated down to its opening normal in the bladder or ectopic (fig. 1); stricture of the ureterovesical junction is relatively common in these cases, and there may even be calculus or other obstruction (fig. 2). In instances of ureterocele, the dilated intracystic ballooning of the ureter may be splendidly demonstrated urographically and demands added special surgical treatment (fig. 3).

From the Department of Urology, New York University, and of Urology and Children's Medicine, Bellevue Hospital.

Read before the Section on Urology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 5, 1941.

Owing to lack of space, this article has been abbreviated for publication in THE JOURNAL by the omission of some illustrations and reading matter. The complete article appears in the author's reprints.

1. Foley, F. E. B.: Surgical Correction of Horseshoe Kidney, J. A. M. A. **115**: 1945-1951 (Dec. 7) 1940.

2. Kretschmer, H. L.: Resection of the Kidney, Surg., Gynec. & Obst. **60**: 984 (May) 1935.

SURGICAL TREATMENT

Renal resection is seldom an emergency procedure, and every effort should be made preoperatively to combat dehydration, acidosis, anemia, faulty alimentation and urinary infection. Blood transfusions are of special supportive value, particularly in children. Urinary infections can usually be controlled by the liberal administration of sulfonamide or mandelic acid compounds according to the bacteriologic indication.[5] Postoperative care demands that these attentions be even more rigorously observed. When digestion permits, remaining urinary infection should be attacked by large oral doses of urinary antiseptics. Nor should the patient be discharged as cured until at least two cultures of aseptically collected specimens are negative.[5] The fulfilment of this dictum will amazingly reduce the incidence of so-called recurrent pyelitis and reduce to a minimum further damage of the renal parenchyma by reparative sclerosis incited by infection.

In carrying out the detailed exposure of the renal blood supply, the pelvis or pelves are mobilized and when reduplicated are carefully separated. In pelvic reduplication the normal ureter will usually be found quite firmly bound to the diseased dilated duct, and in separating them one must exercise particular caution not to injure or divide the sound ureter or its intrinsic blood supply. Partial or complete ureterectomy must always accompany the renal resection, and the length of ureter which will be removed at the same time will depend not only on the ureteral pathologic condition but in great degree on the condition of the patient. If it seems likely that the remaining diseased ureter will contract to a fibrous cord following resection of the kidney, it is divided only as low down as technically convenient and is removed *en masse* with the resected renal segment. Unfortunately it is often necessary to remove the entire ureter, notably when it is widely dilated throughout and especially when there is low obstruction such as stricture at the ureterovesical junction. The choice between the one and the two stage operation will be discussed later.

The remaining renal segment is replaced as high as possible to afford unrestricted dependent ureteral drainage. In one instance (case 19) I anchored the kidney in a high position, but usually this is unnecessary. The loin is now closed in multiple layers with adequate cigaret drainage of the retroperitoneal fossa; the drainage should be especially generous if there has been spillage of infected urine. In recent months I have introduced powdered sulfanilamide into these contaminated wounds with encouraging results, using up to 8 Gm. in older children.

TREATMENT OF THE URETER

Although the segment of ureter to be excised should be delivered before the kidney is divided and the pathologic tissue removed *en masse*, for facility of discussion the management of the ureter here follows that of the kidney.

One Stage Renal Resection with Partial Ureterectomy.—When extensive wide ureteral dilation with or without low obstruction or ectopic opening demands total ureterectomy in addition to the renal resection, three courses are open, and the selection will depend to a great extent on the condition of the patient. In adults in good condition one stage ureteroheminephrectomy may be performed, first disjoining the ureter at its lowermost end through a Gibson or low pararectal incision, mobilizing it as high as possible retroperitone-

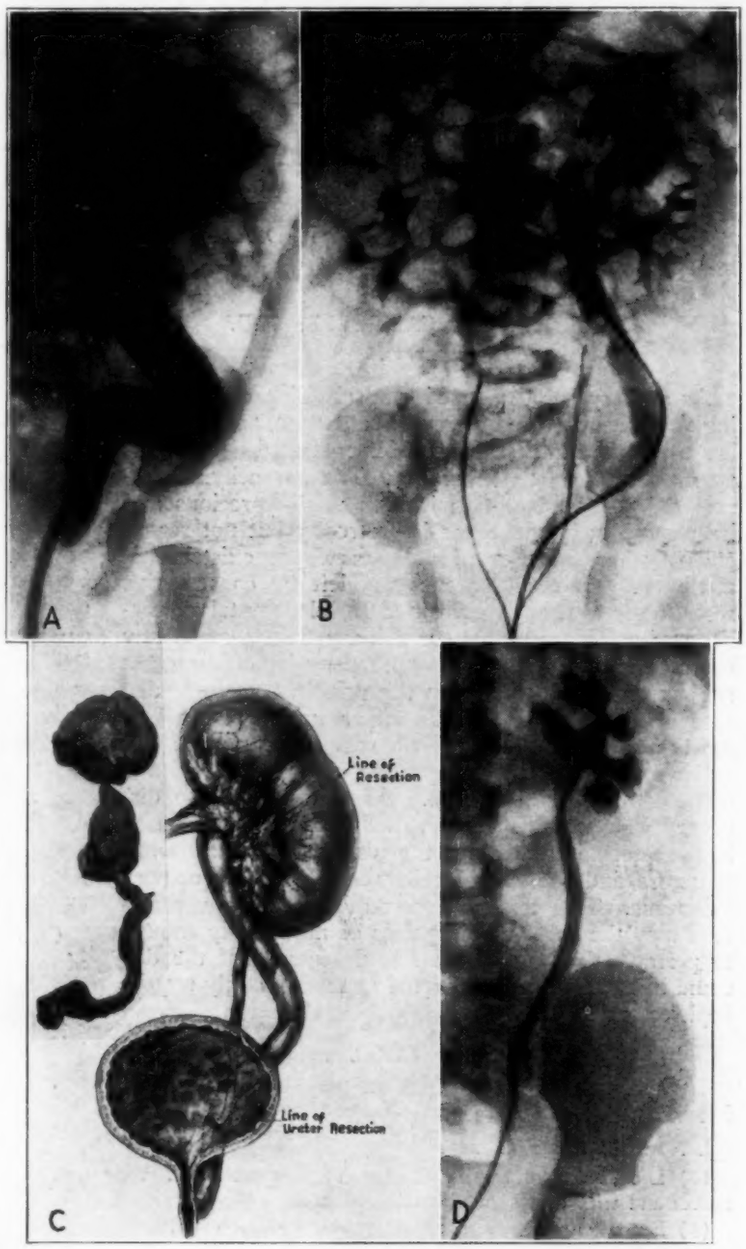


Fig. 1.—Infected left hydronephrosis and hydro-ureter with ectopic ureteral opening (midurethra) in a girl aged 5 months examined because of persistent pyuria (case 16). *A*, "cystogram" produced by urethral catheter accidentally passed into an ectopic ureteral opening. *B*, urogram showing normal right upper urinary tract. On the left the lower pelvis of the reduplicated kidney is normal; the upper pelvis is greatly dilated, as is the ureter. The broad band of parenchyma that separates the upper and lower left pelves suggests the resectability of the kidney; ureteroheminephrectomy was performed at 6 months of age. *C*, schema of pathologic anatomy. Inset shows ureteroheminephrectomy specimen removed from this infant. *D*, pyelogram of remaining left renal segment one year after the operation. The kidney is well situated with adequate drainage, and the renal function was normal at this time.

5. Campbell, M. F.: Pathogenesis and Present Day Treatment of Urinary Infections, Bull. New York Acad. Med. **15**: 609-621 (Sept.) 1939.

Resection of the Kidney in Forty-One Cases

Case and Sex	Age and Date	Side	Symptoms: Pyuria, Duration	Symptoms: Fever	Symptoms: Gastrointestinal Disturbances	Symptoms: Other	Urinalysis: R. B. C.	Urinalysis: Culture	Resected Kidney: Blood Supply	Resected Kidney: Pathology of Removed Segment and Its Ureter	Opposite Kidney	Operation	Postoperative Blood Pressure (Elapsed Time)	Comment
AUTHOR'S CASES (31)														
1. J. M. ♀	28 mo. 10/30	Left	++++	+	++	Jaundice	..	Bacillus coli, Staphylococcus aureus, hemolytic streptococcus	Dual	I.H.*, L.P.† with U.V.J.‡ stricture	Sound #	One stage with subtotal ureterectomy	122/82 11 yr.	11 years postoperative; urine sterile; physical development good; smooth convalescence; blood pressure 10/18/31: 100/75
2. G. N. ♀	22 mo. 1/32	Left	++ 7 mo.	Intermittent	None	.....	..	B. coli	Dual	I.H., U.P.§ with U.V.J. stricture	Sound	One stage with subtotal ureterectomy	.....	1 month postoperative; urine sterile; preoperative phenolsulfonphthalein excretion 2 hours 25%; 1 month postoperative 35%; smooth convalescence
3. S. C. ♀	18 mo. 6/34	Left	++++ 8 mo.	Intermittent	+	Gained poorly	..	Staph. aureus, B. coli	Multiple, bizarre	I.H., L.P. with U.V.J. stricture	Sound	One stage with subtotal ureterectomy	110/70 7 yr.	Smooth convalescence; 5 years postoperative; acute urinary infection; responded to azosulfamide (report of a pediatrician in another city)
4. H. S. ♂	11 yr. 11/34	Left	++++ 12 mo.	Intermittent	+++	Pain in left kidney, hematuria, frequency, loss of weight	++	B. coli	Multiple, bizarre	Same as case 3	Sound	One stage with subtotal ureterectomy	124/84 7 yr.	Smooth convalescence; home in 3 weeks; patient also had congenital contracture of bladder outlet, congenital hypertrophy of verumontanum, congenital stricture of midbulbous urethra, left perineal testicle, blood grouping anomaly; testicle replaced in scrotum, urethral stricture periodically dilated, transurethral resection of verumontanum and bladder outlet obstruction; urine sterilized with methenamine and ammonium chloride
5. J. M. ♀	7 yr. 7/35	Left	+++ 3 yr.	+	++++	Pain in left kidney, hematuria, frequency, loss of weight	+++	B. coli, nonhemolytic streptococcus	Multiple, bizarre	Same as case 3	Sound	One stage with subtotal ureterectomy	.....	Smooth convalescence; home on tenth day; urine later sterilized with sulfanilamide
6. C. F. ♀	7 mo. 2/37	Left	++++ 3 mo.	++	+	Recurrent "acute pyelitis"	..	B. coli, Staph. aureus	Multiple, bizarre	Same as case 3	Incomplete ureter reduplication	One stage with subtotal ureterectomy	.....	Smooth convalescence; urine normal and sterile 4 years later
7. M. S. ♀	10 yr. 1/39	Right	+++ 3 mo.	++	+++	Hematuria, dysuria	+++	B. coli	Dual	Same as case 3	Sound	One stage with subtotal ureterectomy	.....	Smooth convalescence; mild recurrence of infection 6 months after urine had been sterilized with sulfanilamide
8. H. M. ♂	40 yr. 5/39	Right	++++ 3 yr.	Occasional	No	Contracted bladder outlet, dysuria	+	B. coli	Multiple, bizarre	Same as case 3	Incomplete ureter reduplication, U.V.J. strict.	One stage with total ureterectomy	128/84 1 yr.	Stormy convalescence; patient home in 3 weeks; transurethral prostatic resection preceded renal resection 1 year; left ureter stricture dilated twice; mild persistent B. coli infection despite sulfonamide therapy
9. A. R. ♀	5 mo. 10/36	Left	++++ 10 wk.	+	+++	Constipation, ++	..	B. coli, hemolytic streptococcus, Staph. aureus	Dual	I.H., U.P., U.V.J. stricture of each reduplicated ureter, worse to upper pelvis	Large ureterocele, ureter dilatation ++	One stage with total ureterectomy	132/72 3 yr.	Moderately stormy convalescence owing to acute membranous tonsillitis; urine sterilized with sulfanilamide but mild recurrence 6/37; preoperative blood pressure 90/50
10. B. C. ♀	6 mo. 2/40	Left	+++ 6 wk.	+++	+++	.....	Occasional	Same as case 9	Dual	I.H., L.P. with U.V.J. stricture	Sound	One stage with subtotal ureterectomy	.....	Smooth convalescence; home 11 days; urine sterilized with sulfanilamide and known to be so 1 year postoperatively
11. P. S. ♀	9 yr. 5/32	Right	++++ 15 mo.	++	+	Dysuria, bronchitis	+	B. coli	Multiple, bizarre	I.H., U.P. with large ureterocele	Complete ureter reduplication; mild infection	Two stage: (1) cystostomy and suprapubic excision of ureterocele, (2) resection with subtotal ureterectomy	.....	Smooth convalescence; urine subsequently sterilized with methenamine and ammonium chloride; striking growth improvement
12. G. K. ♀	24 mo. 4/36	Left	++++ 1 yr.	Occasional	+	Dysuria	..	Staph. aureus	Multiple, bizarre	Same as case 11	Sound	Same as case 11	.....	Smooth convalescence; patient had congenital stricture of urethra; urine sterilized with azosulfamide and known to be so 4 years later
13. L. W. ♀	6 yr. 1/40	Left	++++ 1 yr.	Periodic	++	Dysuria	Occasional	Hemolytic streptococcus	Multiple, bizarre	I.H., U.P. with ureterocele, large reduplicated ureter	Sound	Same as case 11	108/80 14 mo.	Home 12 days postoperative; tight urethral stricture periodically dilated; urine sterilized with sulfonamides and has remained so to date

Case and Sex	Age and Date	Side	Symptoms: Pyuria, Duration	Symptoms: Fever	Symptoms: Gastrointestinal Disturbances	Symptoms: Other	Urinalysis: R. B. C.	Urinalysis: Culture	Resected Kidney: Blood Supply	Resected Kidney: Pathology of Removed Segment and Its Ureter	Opposite Kidney	Operation	Postoperative Blood Pressure (Elapsed Time)	Comment
14. D. C. ♀	19 mo. 1/40	Right	++++ 1 yr.	+	+++	No gain; prolapsed ureterocele	+	B. coli, Staph. aureus, hemolytic streptococcus	Multiple, bizarre	As above with ureterocele prolapse	Ureter stricture	Same as case 11	.....	Stormy course with extensive wound infection and breakdown; as wound repair began, child died of toxic exhaustion
15. S. J. ♂	8 yr. 11/40	Left	++++ 3 yr.	++	++	Recurrent "acute pyelitis," dysuria, frequency, hematuria	++	B. coli, Staph. aureus, hemolytic streptococcus	Multiple, bizarre	I.H., L.P. with ureterocele	Complete reduplication of ureters	Same as case 11	114/82 6 mo.	Smooth convalescence; home 13 days; postoperative pyelogram: good pelvis and renal function; mild persisting staphylococcic infection; sulfathiazole
16. E. M. ♀	5 mo. 9/29	Left	++++ since birth	Recurrent since birth	+	Severe anemia	+	B. coli	Single	I.H., U.P., ectopic ureter orifice floor of midurethra	Sound	One stage renal resection with subtotal ureterectomy	.....	Smooth convalescence; 6 months postoperative phenolsulfonphthalein output 80% in 2 hours; 1 year postoperative undistorted remaining renal segment; urine shows "rare leukocyte"
17. H. L. ♀	3 yr. 12/33	Left	++++ 10 wk.	++	++++	Frequency, urgency, left loin pain	++	B. coli	Multiple, bizarre	Same as case 16	Sound	Same as case 16	.....	Smooth convalescence; no follow-up
18. S. P. ♀	13 mo. 3/33	Left	++++ 8 mo.	+	+	Born with right scapular nodule, 3 cm.; no change in 3 years	..	B. coli, Staph. aureus	Multiple, bizarre	I.H., U.P., ureter orifice ectopic in introitus below urethral meatus	Complete ureter reduplication, upper pelvic ureter opens in midurethra	Same as case 16	.....	Smooth convalescence; died 3 years postoperative of fibrosarcoma of the scapula
19. S. K. ♀	5 yr. 6/35	Left	++++ 2 mo.	++	+++	Frequency, pain in left upper quadrant	..	Staph. aureus	Single	Same as case 16	Sound	Same as case 16 with nephropexy of remaining segment	120/80 5 yr.	Stormy course due to small, deep muscle infection; incised and drained; in hospital 7 weeks (longest convalescence)
20. S. F. ♀	21 yr. 4/40	Right	+++ "months"	Occasional	Occasional	2 mo. pregnant	Occasional	Nonhemolytic streptococcus, B. coli	Multiple, bizarre	Same as case 16	Sound	Same as case 16 without nephropexy	128/82 10 mo.	Smooth convalescence; home in 13 days; 7 months later delivered of twins; urine sterilized with sulfanilamide
21. R. S. ♀	7 yr. 2/40	Left	++++ "months"	0	0	Incontinence since birth; hyperadrenalism	..	Staph. aureus, B. coli	Multiple, bizarre	Same as case 16	Sound	Same as case 16	140/80 1 yr.	Smooth convalescence; home in 11 days; ureter opened just within external urethral meatus; preoperative blood pressure 132/55, on excitement goes to 160/68 (adrenalopathy ?)
22. G. L. ♀	23 yr. 3/40	Left	+++ 3 yr.	Occasional	Occasional	Loin pain, frequency, anemia	Occasional	B. coli, hemolytic streptococcus	Dual	Same as case 16	Sound	Same as case 16	.....	Smooth convalescence; home 3 weeks; no follow-up
23. P. P. ♀	14 mo. 4/41	Left	++++ 8 mo.	++	+++	Anemia	..	B. coli, Staph. aureus	Multiple, bizarre	Same as case 16	Moderate U.V.J. stricture; Staph. aureus infection	Same as case 16	.....	Moderately stormy convalescence due to excessive vomiting
24. M. T. ♀	10 yr. 1/30	Right	.....	.....	.....	Right abdominal tumor with pain for many months	+	.....	Bizarre	Horseshoe kidney with 10 cm. cyst of upper reduplicated right pelvis	Left half of horseshoe	Resection right half horseshoe kidney	.....	Operated on with mistaken diagnosis of renal neoplasm; sudden evacuation of cyst contents and accidental laceration of aberrant vessel close to aorta and high under liver caused shock which was fatal 4 days later
25. M. W. ♀	8 yr. 8/38	Right	+	Occasional	++++	Severe pain in right upper quadrant	..	B. coli	Bizarre	I.H. ++++ right half of horseshoe kidney	Mild stricture of ureter at level of iliac crest	Resection right half horseshoe kidney	"Normal"	Symptomatically cured; urine sterilized; patient had been thought to have gallbladder disease; 3 complete gastrointestinal x-ray and 8 gallbladder dye series obtained before renal lesion was suspected
26. L. D. ♂	11 yr. 2/41	Right	+++	+	+++	Severe pain in right lower quadrant; thought elsewhere to have acute appendicitis	..	B. coli	Bizarre	Same as case 25	Left half of fused kidney in pelvis behind and above bladder	Resection right half horseshoe kidney	126/72 4 mo.	Remarkably smooth convalescence despite extensive retroperitoneal and some intraperitoneal wound contamination; powdered sulfanilamide 10 Gm. put in wound; exacerbation of right infected hydronephrosis had caused exploration elsewhere for acute appendicitis; surgeon got into large renal pelvis, establishing free urinary drainage and symptomatic recovery; urinary infection and fistula persisted

27. C. O. ♂	37 yr. 6/32	Right	++++ 5 yr.	.....	Occasional	Pain in right loin	+	Staph. aureus	Bizarre	Stricture superior calix with 3 stones and I.H.	Normal	Resection upper pole for localized hydronephrosis and stone	Smooth convalescence; mild deep wound infection for 10 days; home 16 days
28. E. S. ♂	36 yr. 8/37	Right	++++ "years"	Occasional	Occasional	Chronic appendicitis; operated on 14 years ago	..	B. coli, streptococcus	Multiple with superior polar aberrant vein	Same as case 27	Sound	(1) Right nephrotomy; 3 yr. later (2) resection superior pole kidney	Secondary deep wound infection; drained small amount for 3 months; late result satisfactory
29. T. K. ♀	24 yr. 10/41	Left	++ 7 yr.	Occasional	+	Pain in left kidney	..	B. coli	Normal	Same as case 27 with four stones; severe perinephritis	B. coli with pyelonephritis	Resection of upper pole for localized hydronephrosis and stone	Smooth convalescence except for vomiting; mild deep wound infection with drainage 4 weeks; symptomatically cured
30. R. S. ♀	23 yr. 4/34	Right	.....	.....	.....	Pain, swelling in right loin 18 mo.	..	Sterile	Normal	Cyst lower pole 5 cm.	Sound	Excision of cyst with suture closure	Uneventful convalescence; home 12 days
31. M. E. ♂	42 yr. 2/36	Left	.....	.....	.....	Pain in right loin 1 year	..	No culture	Multiple	Cyst lower pole 4 cm.	Sound	Excision of cyst with suture closure	Mild postoperative bleeding with discharge for 16 days
BELLEVUE HOSPITAL CASES (10)													
32. H. K. ♂	39 yr. 7/31	Right	+	.....	++	Pain, right side and back	..	No culture	Normal	Solitary cyst; medioanterior kidney	Sound	Excision solitary renal cyst	Stormy convalescence for 1 week postoperative; symptoms of prostatitis persist 1 month postoperatively
33. P. S. ♀	55 yr. 1/38	Left	Occasional	.....	.....	Frequency, hematuria 6 mo.; pain in left loin	++	No culture	Normal	Solitary cyst; upper anterior pole (40 cc.)	Sound	Excision solitary renal cyst	Preoperative diagnosis renal neoplasm; smooth convalescence
34. M. M. ♂	56 yr. 12/38	Left	+	.....	.....	Pain in right loin, frequency	+	.....	Normal	Solitary cyst; upper pole 5 cm. in diameter	?	Excision solitary renal cyst	Preoperative diagnosis renal neoplasm; smooth convalescence
35. J. K. ♂	47 yr. 7/40	Right	+	.....	.....	Pain in right loin, frequency	+	.....	Normal	Localized hydronephrosis lower third of kidney	?	Resection localized hydronephrosis	Six weeks postoperative; transurethral prostatic resection for median bar
36. M. G. ♂	33 yr. 12/39	Left	+	.....	.....	Pain in left loin 18 mo.	+	.....	Normal	Localized hydronephrosis lower half with 4 stones	Sound	Resection localized hydronephrosis	Postoperative pneumonia; 6 weeks postoperative small stone shadow seen in region of lower pole left kidney (extrarenal ?)
37. E. D. ♂	21 yr. 5/23	Right	+	++	+	Acute epididymitis on right; pain in right loin	+	B. coli	Dual	Acute suppurative nephritis right half of horseshoe kidney with reduplicated right pelves	Sound	Resection right half horseshoe kidney	Stormy convalescence
38. R. M. ♂	23 yr. 3/31	Right	++++	++	+	Pain in right upper quadrant 2 years	+++	.....	Bizarre	Stone in right half horseshoe kidney; reduplicated right pelves	Sound	(1) Pyelolithotomy for stone (2) resection right half horseshoe kidney, (3) further resection for persistent fistula	Stormy convalescence; microscopic report suppurative nephritis
39. G. M. ♂	22 yr. 2/31	Left	++++	++	+++	Left abdominal pain	+	.....	?	Pyonephrosis left half horseshoe kidney	Sound	Resection left half horseshoe kidney	Smooth convalescence
40. H. G. ♂	36 yr. 7/37	Right	+	++	+	Right abdominal 6 mo.; hematuria	++++	.....	Bizarre	Advanced infection hydronephrotic right half of horseshoe kidney	Sound	Resection left half horseshoe kidney	Smooth convalescence; small wound abscess incised and drained
41. R. R. ♂	26 yr. 1/41	Left	.....	.....	.....	Hypertension	Occasional	.....	Dual and bizarre	Advanced left hydronephrosis with calculus in horseshoe kidney	Sound	Resection left half horseshoe kidney	Smooth convalescence; patient "never felt better in his life"; original examination because of high blood pressure; on admission only 128/88, postoperative 120/100

* Infected hydronephrosis. † Lower reduplicated pelvis. ‡ Ureterovesical junction. § Upper reduplicated pelvis. # Morphologically normal but usually mildly infected.

ally and then removing it and its attached resected renal segment through the usual loin incision for nephrectomy.

Two Stage Ureteronephrectomy.—When the condition of the adult patient is less certain, the procedure indicated in the preceding paragraph may be employed with initial renal resection and partial ureterectomy and with subsequent removal of the remaining ureter when the condition of the patient permits. I consider this the best procedure in all children who require total ureterectomy, even in those in good physical condition.

When the condition of either child or adult patient is poor, and a two stage operation is definitely indicated from the outset, I prefer to begin with an attack on the low end of the ureter. At the first operation the ureter is disjoined from its point of origin if ectopic or from its junction with the bladder if the obstruction is in this area or the ureter is widely dilated to its termination. The ligated cauterized proximal end is covered by a piece of rubber dam fastened as a hood over the ureter end by a tightly tied ligature. The ureter stump is mobilized upward as far as possible, usually to the level of the posterior ilium. The mobilized lower ureter is then brought out through a stab incision 2 or 3 cm. mesial to the level of the iliac crest and anchored to the cutaneous layer with two or three fine sutures. If the cut end of the ureter is turned back on itself in cuff formation for 1.5 or 2 cm. and kept moist for a few days with gauze soaked in physiologic solution of sodium chloride, necrosis is unlikely to occur. In performing cutaneous ureterostomy in this manner it is good practice to fasten indwelling in the ureter a large four eye Robinson type catheter, which will facilitate wound healing by draining away the infected urine to an appropriate receptacle. Later, when the condition of the patient permits, the kidney is exposed, the upper ureter is mobilized down to the point of cutaneous ureterostomy, which, by a racquet-shaped continuation of the loin kidney wound, is excised *en masse*. The lower ureter and ureterostomy stump are wrapped in a protective pad and the renal resection is carried out, the diseased tract being removed in toto.

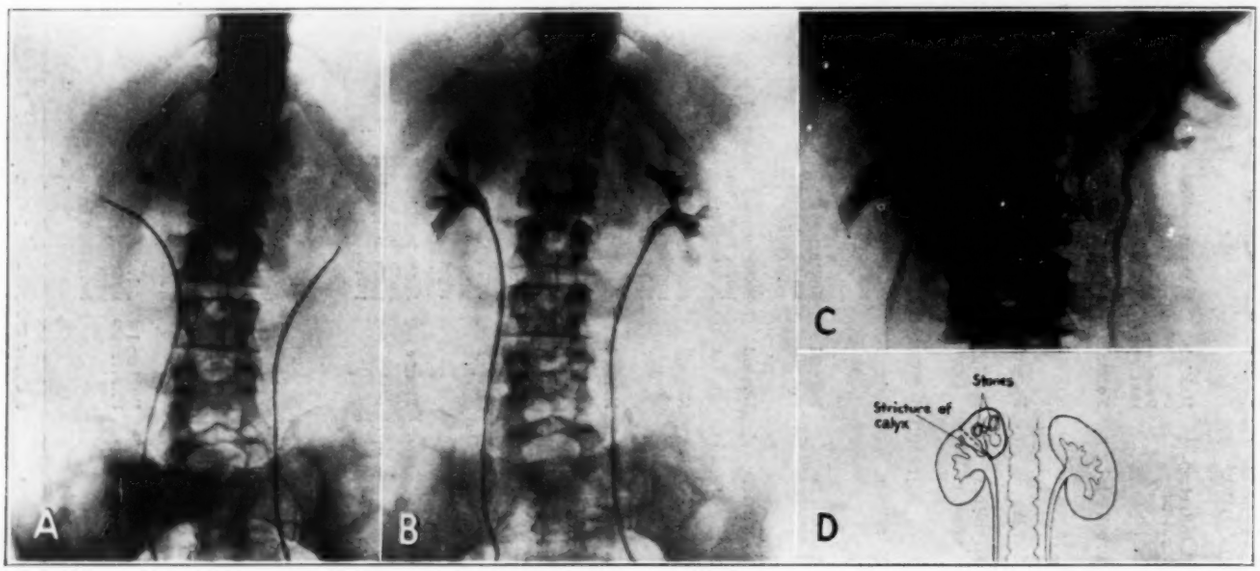


Fig. 6.—Partial (upper pole) right renal resection for localized stone in a man aged 36 with pyonephrosis (case 28). *A*, stone in superior calix of right kidney. *B*, urographic demonstration of infected hydronephrosis localized to superior calix. *C*, right kidney one year after partial renal resection. *D*, schema of pathologic anatomy and line of resection.

COMPLICATIONS

Postoperative wound infection and renal necrosis due to thrombosis or ischemia are the most feared complications. Minor wound infections are not uncommon in these cases, but in an infant of 19 months (case 14) massive wound infection secondary to infected urinary spillage produced a fatal toxemia, death occurring at a time when wound repair had satisfactorily begun. The prolonged battle against the infection proved too great for the feeble constitution.

RESULTS

In this series of 41 patients treated by renal resection, there were 2 deaths (5 per cent mortality), 1 of a child with an enormous upper pelvic cyst of the right reduplicated portion of a horseshoe kidney. Death four days after operation was directly due to surgical trauma (largely rapid evacuation of the cyst) and to hemorrhage from an aberrant vessel entering the upper pole of the cystic kidney from high under the liver (case 24). The other death (case 14) was attributable to infection of the wound in the loin.

SUMMARY

There is a conservative surgical treatment of certain renal diseases localized to one segment of a normally formed kidney or to one half of a reduplicated, horseshoe or an otherwise bilaterally fused kidney.

In some instances, the remaining segment of the kidney will prove to be so small as to make resection an unwarranted or unjustifiable surgical risk; here nephrectomy is required. Occasionally primary or secondary nephrectomy will be required because of surgical damage to the renal vascular supply.

With due care to adequate preoperative preparation by the administration of fluids, urinary antiseptics and particularly blood transfusions, a gratifying number of both young and older patients will be successfully subjected to renal resection with the conservation of a worth while amount of satisfactorily functioning tissue. The technic of and indications for the various procedures employed are to be considered. The mortality

rate of this operation (5 per cent) is low in view of the gravity of the surgical problem.

When urinary infection is part of the urologic disorder, postoperatively the patient should not be discharged as cured until at least two negative cultures of an aseptically collected specimen of urine have been obtained.

To date I have been unable to demonstrate any notable changes in the blood pressure of patients left with one half of a reduplicated kidney.

140 East Fifty-Fourth Street.

INFUSIONS OF BLOOD AND OTHER FLUIDS VIA THE BONE MARROW

APPLICATION IN PEDIATRICS

L. M. TOCANTINS, M.D.
J. F. O'NEILL, M.D.
AND
H. W. JONES, M.D.
PHILADELPHIA

Substances injected into the marrow cavity are rapidly taken up,[1] apparently unchanged, into the general circulation.[2] The problem of administering fluids to infants is a difficult one, especially when rapid absorption is desired. The two main routes available, aside from the peripheral veins themselves, are the superior longitudinal sinus, reached through the anterior fontanel, and the peritoneal cavity. The infusion of substances through the anterior fontanel, unless in skilled hands, is attended by a high risk. The absorption of substances injected intraperitoneally may, under certain circumstances, be greatly delayed. Moreover, in treatment of disorders of the abdomen it is not advisable to use this route. Thus there is left a group of infants for whom infusion by the intramedullary route may be the only advisable resort. These considerations have led us to a trial of the merits of the intramedullary route for infusion of fluids in a group of young children.

Experimental proof, in addition to that already presented,[2] that drugs as well as blood are utilized rapidly when injected by this route has been obtained in the following manner:

1. Restoration of blood volume by intramedullary injection of citrated blood in a dog made anemic by bleeding: The dog was bled of about one fifth of its calculated blood volume in three and two-fifths minutes while under intratracheal ether anesthesia. The blood pressure dropped from 160 mm. of mercury to 70 mm. After it had been stabilized at this level for fifteen minutes, 440 cc. of citrated blood was injected into the sternum with a syringe. The blood pressure rose slowly and reached 140 mm. at the end of the injection. It was so maintained until the end of the experiment (fig. 1).

2. Comparison of the action of epinephrine on the blood pressure when the drug is injected intravenously and when it is injected through the intramedullary route: One-tenth mg. of epinephrine was injected in three seconds into the femoral vein of a dog under deep intratracheal anesthesia. A rise in blood pressure followed, with return to normal within two minutes. After stabilization of the pressure the same amount of epinephrine was injected at the same rate through a needle placed in the marrow of the tibia. The response of the blood pressure after the two injections was similar in intensity and duration (fig. 2).

3. Visualization of the renal pelvis after the intramedullary injection of diodrast: In collaboration with Dr. Karl Kornblum, of the roentgenologic department of the Jefferson Medical College Hospital, we have attempted to visualize the renal pelvis after the injection of radio-opaque substances through the intramedullary route. Five minutes after the injection of 20 cc. of diodrast (over an eight minute period) both renal pelves were clearly outlined in the roentgenograms. This method is now under trial for use when intravenous urography is necessary but difficult, as in children.

To date intramedullary infusion of fluids has been tried on 49 patients in all (38 adults and 11 infants under the age of 2 years). Fifty-six infusions were attempted on the 38 adults, of which fifty-three were carried to completion. Three attempts in 1 patient met with no success; an autopsy ten days later disclosed

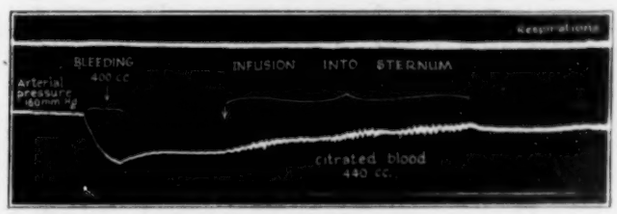


Fig. 1.—Effect on the carotid blood pressure of an adult dog of the injection into the sternum of an amount of citrated blood equivalent to that withdrawn fifteen minutes before from the femoral artery.

Fig. 2.—Comparison of the effects of epinephrine when injected intravenously, intramuscularly and into the tibial marrow of a dog.

that the sternal marrow was unusually dense. From 50 to 6,800 cc. of various fluids has been infused; the needle has been left in place from seven minutes to thirty and one-half hours. The average rate of flow by gravity into the manubrium sterni of adults has been 3.4 cc. per minute (range, 0.4 to 25 cc. per minute). In the body of the sternum the rate has been 3.1 cc. per minute (range, 0.4 to 9.1 cc.).

Technic.—Elsewhere [3] the various steps of the technic for the infusion of fluids into the marrow cavity are described in detail. In adults the sites of choice for infusions are the manubrium and the body of the sternum. In infants under 3 years of age the marrow cavity of the sternum is not large enough to permit its use for this purpose. Figure 3 illustrates the appearance of sternal marrow in a number of infants ranging in age between prematurity (6 months' gestation) and

---

Dr. O'Neill is a Ross V. Patterson Fellow.

Read before the Section on Pediatrics at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 4, 1941.

From the Divisions of Hematology and Surgery of the Jefferson Medical College of Philadelphia and the Jefferson Medical College Hospital and the Charlotte Cardeza Foundation.

Professors George P. Muller, J. Parsons Schaeffer, Edward L. Bauer and Karl Kornblum, of the Jefferson Medical College, and Drs. Elmer J. Bertin, Donald C. Geist and Thomas J. Ryan, of the Misericordia Hospital, cooperated in this study.

1. In view of this rapid take up of substances injected into the bone marrow one must not inject materials, such as oily suspensions, which are not well tolerated intravenously. Drake and Gruber (personal communication to the authors) have observed that liquid petrolatum, epinephrine in oil, and the like, injected into the tibial bone marrow of rabbits and cats enter the femoral vein within one second. If sufficient oil is injected death results, as it does when an equivalent amount is injected intravenously.

2. Tocantins, L. M.: Rapid Absorption of Substances Injected into the Bone Marrow, Proc. Soc. Exper. Biol. & Med. **45**: 292 (Oct.) 1940. Tocantins, L. M., and O'Neill, J. F.: Infusion of Blood and Other Fluids into the Circulation via the Bone Marrow, Proc. Soc. Exper. Biol. & Med. **45**: 782 (Dec.) 1940. Footnote 3.

3. Tocantins, L. M., and O'Neill, J. F.: Infusion of Blood and Other Fluids into the Circulation via the Bone Marrow: Technic and Results, Surg., Gynec. & Obst. **73**: 287 (Sept.) 1941.

4 years. The majority of the sternums were obtained at autopsy from babies either stillborn or dead from any of a number of different illnesses. It may be observed that up to the age of 24 months the marrow cavity of either the body or the manubrium of the sternum is not of sufficient size to afford assurance of a successful infusion. After the third year it would appear that the cavity is developed to the point at which an infusion is practical. To date no infusions have been performed on children between the ages of 2 and 14 years; a definite statement on the site of choice between these ages cannot be made at present.

the needle on the surface of the bone. Penetration of the cavity is accompanied with a feeling of diminution in the resistance offered to the needle and occasionally by a "trap door" effect.

The solid stylet is then removed, and a syringe holding about 1 cc. of salt solution is applied to the needle. Suction is then applied, and if the bevel of the needle is correctly placed, marrow will appear in the syringe. Occasionally active suction has to be applied when the marrow is unusually dense. Next the inner needle is removed and rinsed through quickly with fresh salt solution from another syringe; it is

Intramedullary Infusions of Fluids in Infants

Patient	Age	Sex	Diagnosis	Material Infused	Amount (Cc.)	Site	Duration of Flow (Minutes)	Rate of Flow (Cc. per Minute)	Number of Attempts: Success	Number of Attempts: Failure	Remarks
J. H.	10 mo.	M	(a) Hemolytic anemia	Citrated blood	140	Right tibia	120	1.16	1	..	
			(b) Hemolytic anemia	Citrated blood	300	Right femur	135	2.22	1	1	
			(c) Hemolytic anemia	Citrated blood	300	Left femur	255	1.17	1	..	
G. G.	10 mo.	M	Bilateral mastoiditis, anemia	Citrated blood	100	Lower end of right femur	200	0.5	1	..	
H. M.	19 mo.	F	Empyema, anemia	Citrated blood	175	Upper end of right tibia	120	1.45	1	..	
B. G.	13 mo.	F	Anemia	Citrated blood	200	Left femur / Left tibia	160	1.25	1	3	
G. H.	14 mo.	F	Glomerular nephritis	Citrated blood and physiologic solution of sodium chloride	400	Upper end of right tibia	50	8.0	1	..	Died 2 days after; no postmortem examination
A. G.	6 mo.	F	(a) Gastroenteritis, nutritional anemia	Citrated blood	100	Right femur	..	...	1	2	Blood injected with syringe
			(b) Gastroenteritis, nutritional anemia	Citrated blood	150	Left femur	45	3.3	1	..	
			(c) Gastroenteritis, nutritional anemia	Citrated blood	100	Left tibia	15	6.6	1	..	
G. C.	5 mo.	M	Burns of head and arms	Citrated blood	50	Right femur	40	1.2	1	..	
D. B.	2½ mo.	F	Bronchopneumonia	Physiologic solution of sodium chloride	30	Tibia	7	4.2	1	..	
B. L.	7 wk.	M	(a) Pyloric stenosis, nutritional anemia	Citrated blood	145	Left femur	65	2.2	1	..	
			(b) Pyloric stenosis, nutritional anemia	Citrated blood	125	Right femur	33	3.7	1	..	
R. S.	10 days	F	Hemolytic anemia, erythroblastosis	Citrated blood	...	Right and left femur / Right tibia	..	...	..	3	Well at 4 months of age
J. O.	2 days	M	Erythroblastosis	Citrated blood	...	Right and left femur / Right and left tibia	..	...	..	4	Transfusion given in the jugular vein; death two days later

Figure 4 illustrates the appearance of the tibia and femur of a full term newborn child. Though there are minor differences as to size in the marrow cavities of normally developed infants at birth, in view of its nearness to the surface of the body and the absence of intervening structures such as blood vessels and nerves, the marrow cavity of the upper end of the tibia is the site of choice. The needle is placed perpendicular to the medial surface of the tibia, as illustrated. After infiltration of the skin and the subcutaneous tissue with a 1 per cent solution of procaine hydrochloride the needle is introduced under the skin. Once the periosteum is reached the needle is tilted as illustrated and the marrow cavity is penetrated by turning the needle with a semirotatory motion with one hand while holding the bone firmly between the index finger and the thumb of the other hand. It is important that the bone be held as fixed as possible to prevent sliding of

then quickly reintroduced into the larger needle, and during the introduction saline solution is injected and aspirated from the lumen of the outer needle. About 2 cc. of saline solution is then injected slowly into the marrow cavity. If the needle is correctly placed, little resistance is offered to the injection of fluid. Immediately after it is ascertained that the needle is in the proper position, the inner needle and syringe are removed while the injection is kept up, in order to keep the lumen of the outer needle filled with salt solution. The adapter leading to the intravenous infusion apparatus filled with salt solution is then connected with the needle. The reservoir should be placed at least 1 meter above the point of entrance of the needle. The various maneuvers, from the time marrow is obtained by suction until the infusion apparatus is connected, should be carried out as swiftly as possible. Any slowness at this stage will allow the marrow to

clot in the inner needle, thereby obstructing the lumen. If no flow is obtained when the reservoir is placed at the height of 1 meter it should be raised to 1.5 meters or to any intervening height at which the fluid will flow at a moderate rate.

Once the flow is established the infusion apparatus should not be changed or the reservoir lowered for any reason; a dropping of pressure in the tubing will allow the marrow to come up and clot in the lumen of the needle, thereby obstructing any further flow. If the sternum is employed one must keep in mind that the anterior and posterior sternal plates of a child offer much less resistance than those of an adult and therefore can be easily penetrated. It is advisable to use short needles (length of the shaft not to exceed 2 cm. for the tibia, 4 cm. for the femur). The needles should also be provided with a ball guard to be adjusted against the surface of the skin after the flow is established. The curved metal adapter is convenient in place of the straight glass adapter, which projects too far out above the surface of the skin and may be displaced by movements of the patient (fig. 5).

Results.—In the table are the results of infusions carried out in 11 infants ranging in age from 2 days to 19 months. The following cases illustrate the type of clinical condition in which intramedullary infusion may be of value.

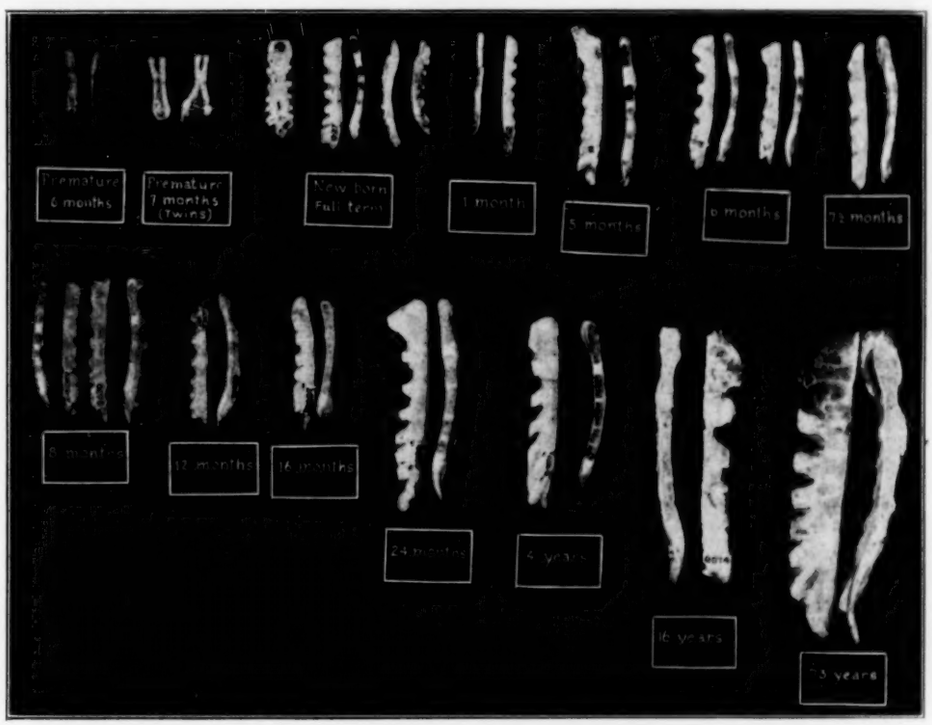


Fig. 3.—Aspects of the anterior surface and the longitudinal section of the sternal plates of infants, children and adults of various ages.

REPORT OF CASES

CASE 1.—*History.*—J. H., a white boy aged 9 months, was brought to the hospital by his mother because of increasing pallor, yellowness of the skin and fever. Six weeks before admission the mother noticed that one side of the baby's face was swollen. The baby was teething at the time. Two weeks after the onset of the swelling the child had an erythematous rash over the face. The family physician prescribed two "white pills" six times a day, and the mother had given the child this medication for the six weeks preceding admission. Two days before being admitted the child became jaundiced, refused to eat and vomited all the feeding. There was no diarrhea, the stools were normal in color and there was no blood in the urine. The child was unusually fat and was pale and irritable; the respirations were rapid; the temperature was 102 F.; there was a yellowish tint in the conjunctiva, and the body skin itself was light yellow. The liver was palpated about 2 fingerbreadths below the costal margin, and the spleen was just felt under the costal margin. There was slight edema of the extremities. There was no adenopathy. There were no external evidences of bleeding. The hemoglobin content was 29 per cent, the red blood cells numbered 800,000 and the white blood cells 13,200 and the bleeding time and coagulation time were normal. The differential cell count was within normal limits for a child of 9 months. The boy was given a direct transfusion into the left jugular vein of 128 cc. of blood. The next day another transfusion, of 83 cc., was given into the right external jugular vein by the resident physician. Because of the child's struggling while the transfusion was being given the needle escaped from the vein several times.

The next day the baby did not show any improvement, and there was a cellulitis of the neck about the sites of the venous punctures. The blood on September 28 showed 21 per cent hemoglobin, 1,080,000 erythrocytes and 17,000 leukocytes. On October 1 the hemoglobin content had been 19 per cent, with 920,000 red cells and 26 per cent reticulocytes. In view of the urgent need for a blood transfusion in the absence of any available veins it was decided to administer the blood by the intramedullary route. The baby's blood was of group AB. Besides the difficulty in securing a donor with blood of this group, there was a slight clumping effect of the boy's serum on the donor's blood cells at room temperature on standing for several minutes. Because the clumping was not marked enough for the blood to be considered incompatible it was decided to use the donor anyway. Over a period of two hours 140 cc. of citrated blood was given into the right tibia. The baby was visibly improved; the following day the hemoglobin content was 33 per cent, and the red blood cells numbered 1,450,000. Another transfusion, of 300 cc. of blood over a period of two hours and fifteen minutes, was given into the right femur. Twenty-four hours later the hemoglobin content was 66 per cent and the red cells numbered 2,290,000, with 11.5 per cent reticulocytes. Six days later the red cell count and the hemoglobin content again dropped, and another transfusion was given (300 cc. over a period of four hours and fifteen minutes), into the lower portion of the left femur. The hemoglobin content was raised from 34 to 55 per cent within forty-eight hours after the transfusion. The baby remained in the hospital for about two months longer and during this interval had two short attacks of fever, with anemia and slight jaundice. These attacks were, however, of short duration and were followed by a spontaneous recovery.

Roentgen examinations were made of the right tibia and the femurs the day after the transfusions and three or four weeks afterward. The first study disclosed small orifices in the bones made by the needle; subsequent studies three weeks and six months later did not reveal any changes in the three bones.

Laboratory Studies.—On admission urobilinogen was found in a 1:100 dilution of the urine. The stools gave a strongly positive reaction for urobilin; they contained an excessive amount of bile pigment but no blood. There was no bile pigment in the urine throughout the illness. A test of fragility of the erythrocytes showed hemolysis to begin with a 0.4 per cent solution of sodium chloride and to be complete with a

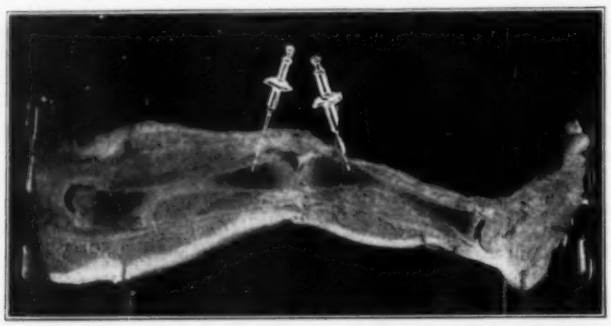


Fig. 4.—Longitudinal section of the lower extremity of a newborn infant. Infusion needles are drawn in to indicate the sites of election and the correct position of the needles.

0.32 per cent solution. The mean corpuscular volume of erythrocytes was 111 cubic microns, the mean corpuscular hemoglobin was 29 micrograms and the mean corpuscular hemoglobin concentration was 25 per cent. The Wassermann and Kahn reactions of the blood were negative. The van den Bergh reaction was negative on the direct test; the bilirubin content was 3.9 mg. per hundred cubic centimeters. The cholesterol content was 121 mg. Examination of the blood for lead and sulfanilamide gave negative results.

In figure 6 are charted the changes in the blood of this patient after he received the intramedullary blood transfusions. After the infant left the hospital he learned to walk.

CASE 2.—B. L. (observed by courtesy of Dr. J. A. Kelly and Dr. D. C. Geist, of the Misericordia Hospital), a white boy aged 7 weeks, had had pyloric obstruction since birth. At the age of 5 weeks a Rammstedt operation was performed, and the usual hypertrophy of the pyloric musculature was found. After the operation the child continued to vomit and became emaciated (weighing approximately 6 pounds [2.7 Kg.]).

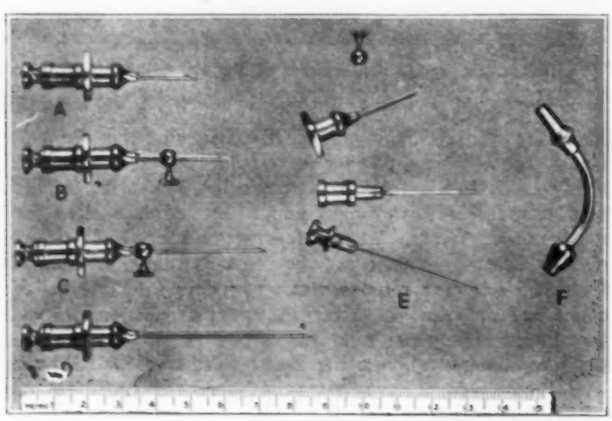


Fig. 5.—A, B, C, D, infusion needles of various lengths. E, component parts of a needle, from top to bottom: needle guard, external needle gage 15, internal needle gage 18, solid stylet. F, curved adapter. (Needles made by the George Pilling Company, Philadelphia.)

Roentgenographic examination after a barium sulfate meal revealed almost complete obstruction at the pylorus. It was impossible to detect in any of the extremities veins suitable for a transfusion. The gastrointestinal disturbance made it inadvisable to use the intraperitoneal route. The needle was inserted into the lower metaphysis of the left femur, and over a sixty-five minute period, 145 cc. of blood was infused. The baby was quiet throughout the infusion. The following day the plasma proteins amounted to 4.1 Gm. per hundred milliliters. The baby began to retain food and to gain weight. Seven days after the first transfusion a second one was given, in the right femur. The baby has continued to gain weight, and there has been no further vomiting. Figure 7 illustrates the changes in the appearance of the bones at various intervals after the infusions.

CASE 3.—A. G., a baby girl aged 6 months in the service of Dr. Cassidy, of the Misericordia Hospital, had severe anemia, complicating attacks of vomiting and diarrhea. The infant was seized frequently with convulsions, and while transfusion was deemed necessary, difficulty was anticipated with keeping needles in the infant's veins. Three infusions of citrated blood were given at the intervals indicated in figure 8. The infant was discharged in good condition six days after the last infusion. Roentgen ray examinations of the extremities disclosed in the bones the orifices produced by the needles, but no other abnormalities were noted.

In 2 infants, infusions were not possible in spite of repeated attempts. There was reason to believe that

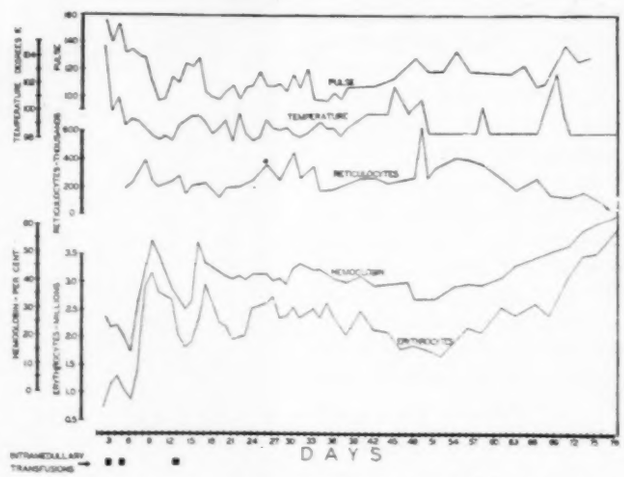


Fig. 6.—Changes in the pulse, temperature and blood of J. H. (case 1).

developmental abnormalities affecting the marrow cavity in both infants accounted, in part at least, for the failure.

CASE 4.—R. S., a baby girl, weighed 6 pounds 10¼ ounces (2.9 Kg.) at birth. When she was 8 days old, it was noted that she was anemic. The spleen was felt 2 fingerbreadths below the costal margin. The erythrocyte count was 1,020,000 per cubic millimeter, the leukocyte count was 22,000 and there were 6 nucleated red cells per hundred leukocytes counted. The anterior fontanel was almost closed. Three attempts, one on each femur and one on a tibia, were made to give the infant a transfusion of blood. A small amount of marrow was obtained each time by aspiration, but it was impossible to start the flow of blood inward. It was finally necessary to give the blood through the longitudinal sinus. Transfusion was repeated ten days later, and from then on the baby made an uneventful recovery. A roentgen-ray examination (by Dr. Stephen Casper) of the patient showed that the skeletal system was unusually developed for an infant of her age. This was evidenced by the density of the bones, the small size of the anterior fontanel and the apparent closure of the posterior fontanel. There were an unusually large number of epiphyses, two being present in the carpus and four in the tarsus.

CASE 5.—J. O., a white boy aged 2 days (observed through the courtesy of Dr. Thomas J. Ryan), was born intensely jaundiced and had a leukocyte count of 97,000 per cubic millimeter, with 77 per cent of the cells nucleated red cells. The anterior fontanel was almost closed. Four attempts were made

to introduce blood through the marrow, one on each tibia, and one on the lower portion of each femur. As in case 4, a small amount of marrow was obtained on aspiration but no blood could be infused by gravity. A transfusion was given through the external jugular vein, and the baby died two days after birth. The roentgen study of the skeleton as compared with bones of normal babies of the same age revealed unusual density of the bones and a small marrow cavity.

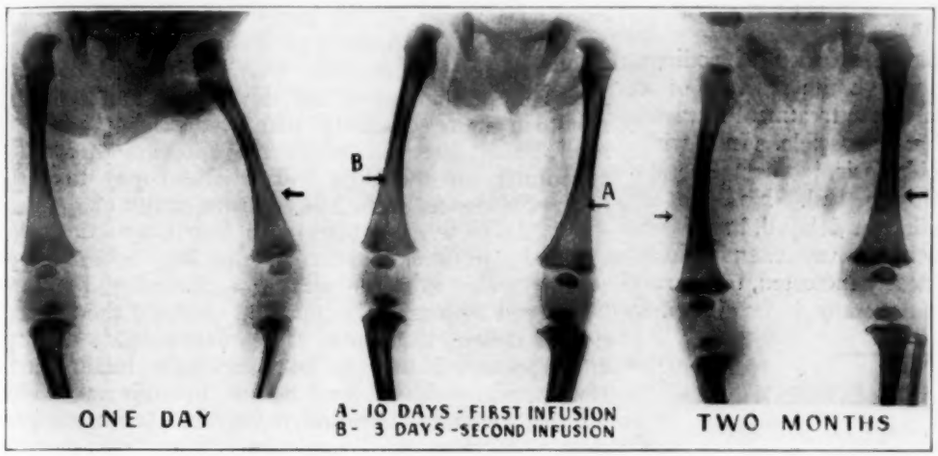


Fig. 7.—Appearance of the femurs of B. L. (case 2) after infusions. Arrows indicate the sites of infusion.

After the foregoing experience with infants with congenital hemolytic anemia and erythroblastosis, roentgenograms of the long bones of another infant with erythroblastosis foetalis were studied. These bones likewise appeared unusually dense, and the marrow cavity at the metaphysis was narrowed. It seems therefore that in patients with these conditions one may not hope for much success for transfusion by the intramedullary route.

There were no local or constitutional reactions, immediate or delayed, after any of the infusions described. Beyond the preliminary period of insertion of the needle and aspiration of the marrow the infants showed no signs of distress, most of them going to sleep during the infusion. Besides the infant last mentioned, there was only 1 in the group who died. This infant had advanced glomerular nephritis and was almost moribund when the infusion was given. All the other infants were living and clinically well on May 30, 1941.[4]

COMMENT

Our experience with the intramedullary infusion of fluids in infants has not been extensive enough for a clear delineation of its field of usefulness and its drawbacks. The method is indicated chiefly when rapid absorption of unchanged substances is necessary and the intravenous route is undesirable or veins are not available. This may be the situation in states of shock, during convulsive seizures, when there is widespread edema, when there have been burns and mutilations or when the anterior fontanel is closed and the veins poorly developed. The method is offered not with the intention of replacing the intravenous route but rather as a supplement or substitute for this route under the circumstances mentioned.

The method would seem contraindicated in cases of severe systemic infections accompanied with bacteremia, of septicemia or of osteomyelitis. The question of fat embolism and its possible occurrence during intramedullary infusions has been discussed in detail elsewhere.[2] Under the conditions outlined for these infusions the likelihood of its occurrence appears to be remote. Neither in adults nor in infants have there been any reactions during or after the infusion that could be interpreted as the result of embolism.

In administering fluids to infants by the intramedullary route, it is important to take care that no air is injected. Small amounts of air (1 cc. or less), well tolerated when injected intravenously into adult dogs, produced severe reactions when injected into small animals.

No material should be infused until one is sure that the needle is correctly placed in the marrow cavity or until marrow is readily obtained by aspiration. Familiarity with the technical points involved should be obtained by practice on cadavers. After marrow is aspirated it is important that the steps which follow until the start of the infusion of the fluid by gravity be carried out as swiftly as possible. This is to prevent any clotting of the marrow in the lumen or at the point of the needle, with resulting obstruction of flow. Delay during this phase of the procedure probably accounts for most of the failures or reductions in the rate of flow. After the infusion is started the pressure in the tubing should be constantly maintained at its original level by taking care not to lower the container holding the infusion fluid from its height of 1 to 1.5 meters above the patient at any time during the infusion.

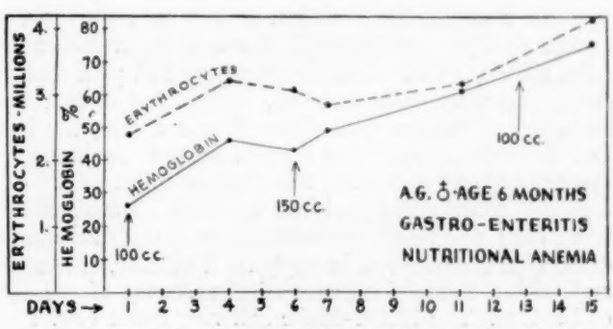


Fig. 8.—Effect of three intramedullary infusions of citrated blood.

Our failure in attempting to infuse blood into 2 infants with congenital anemia and erythroblastosis may indicate that for infants with these conditions the method is not practicable. The failure may be traced to the abnormal degree of ossification of the bones of these infants. Incidentally, this abnormality may bear some relation to the defect in hemopoiesis that probably is responsible for the erythroblastosis and anemia. The bone marrow of infants with erythroblastosis foetalis is

4. Since the presentation of this paper, twelve additional infusions have been given to 10 children of the following ages: 17 days (2), 28 days 1 month (2), 2 months, 22 months (2), 1 year, 13 years. Substantially the same results were obtained as reported above. In infants under 6 months of age it has been possible to use the inner needle (gage 18) and stylet only; burrowing of the bone is thus possible with very gentle pressure, and less trauma is produced. Since the amounts to be given to such infants seldom exceed 100 cc., the entire quantity may be injected slowly (not over 4 cc. per minute) through the same needle.

said to be hyperplastic; no account has been taken, however, of the total volume of the marrow. A reduced marrow volume, because of a corresponding premature abnormal ossification, may be a contributory cause to the anemia and to an increase in extramedullary hemopoiesis. Analogies may be said to exist between this disorder and the anemias that accompany osteosclerosis and marble bones.

SUMMARY

Citrated blood and physiologic solution of sodium chloride have been infused through the marrow of a tibia or a femur of 9 infants in whose treatment intravenous infusions were urgent but impossible. In 2 with congenital anemia and erythroblastosis, it was not possible to infuse any blood by this method. No local or constitutional reactions, immediate or delayed, have been disclosed by clinical and roentgen ray examinations after these infusions. When clearly indicated, the intramedullary route for parenteral therapy is feasible and useful.

THE SPLINTING OF COMPOUND FRACTURES

FRANK J. COX, M.D.

NEW ORLEANS

War and the treatment of the casualties of war have invariably stimulated the study of proper methods of caring for compound fractures. The present world conflict is no exception, and a considerable amount of controversial opinion has been voiced recently as to the best methods of external fixation of compound fractures. This difference of opinion can be accounted for largely by the fact that there exist two schools of primary therapy; one depends on frequent irrigations of the open wound, which necessitate the use of an open splint [1]; the other relies on packing the wound open, applying a closed form of splint and changing the dressing at infrequent intervals.[2] No attempt to evaluate the relative merits of these methods will be made at this time. Forms of external fixation acceptable to each school are here described and various modifications to improve the efficiency of the fixation discussed.

With a compound fracture, it has been universally agreed that prompt, adequate immobilization will minimize the degree of shock, hemorrhage and pain and in many instances even save life. Reports state that the mortality from fractures of the femur during the last war dropped from 60 per cent to 16 per cent immediately after the adoption of the Thomas splint (fig. 1 *a*). Various modifications of the original Thomas splint have been developed to overcome some of the minor difficulties encountered in applying it quickly, efficiently and with a minimal amount of disturbance of the site of fracture. The Keller-Blake half ring splint (fig. 1 *b*) has been accepted as best suited for injuries of the lower extremity, while a full ring hinged splint is still used for those of the upper extremity.[3] The modifications recently described would make the splint lighter and more easily transported yet retain its maximum efficiency.[4]

The clove hitch (fig. 2 *a*) when immediate transportation is involved is considered the best means of exerting traction on the lower extremity. There are certain serious drawbacks to its use when it becomes necessary to exert traction over any period of time. Areas of pressure over the dorsum of the foot may result in more disability than the primary fracture itself. This fact has led to the adoption of various substitutes for the clove hitch. These may take the form of a skewer passed through the shank of the shoe (fig. 2 *c*) or a spring steel clip fastened to the sole [5] (fig. 2 *b*), in order that the pressure may be distributed over a wider area on the dorsal aspect of the foot. The trend at present is apparently toward the application of skeletal traction at the earliest possible moment and whenever it becomes necessary to maintain extension for more than several hours. In ordinary civilian life the clove hitch is entirely acceptable, but its dangers should be recognized and unnecessary complications avoided.

When the patient with a compound fracture has reached the stage at which adequate care is available and proper surgical débridement has been done, the fracture reduced and the wound treated as indicated, the problem of quasipermanent fixation of the fracture arises. Should it be decided to treat the fracture and the wound in an open splint, the proper facilities must be arranged. So-called balanced traction, with a Thomas splint, a Pierson attachment and other devices, requires the use of an elaborate frame or fracture bed and incidental equipment. Furthermore, the apparatus must be seen daily and kept in a constant state of fine adjustment to maintain position and prevent complications. Necessarily, therefore, its use implies either the presence of trained personnel or the personalized attention of the attending physician. Balanced traction certainly has its place in civilian practice, but when a patient must be transported suddenly, under conditions of emergency, it presents a serious obstacle. During the past few years certain modifications have been devised and used in an effort to retain the advantages of the open splint and still to apply an adequate degree of traction; the whole apparatus is self contained, so that the patient may be moved about at will, without danger of unduly disturbing the fracture or the open wound (fig. 3).

The suggestion of combining pin fixation with a Thomas splint for fractures of the tibia and fibula has been made by G. W. Hawley [6] and by R. L. Waugh [7] in the United States. Brown,[8] in China, and McKee,[9] in England, have developed the idea still further, mak-

From the Department of Surgery, Division of Orthopaedics, Tulane University of Louisiana School of Medicine.

Read before the joint meeting of the Section on Surgery, General and Abdominal, and the Section on Orthopedic Surgery at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 6, 1941.

1. Sherman, W. O.: The Carrel Method of Wound Sterilization, Surg., Gynec. & Obst. **24**: 214, 1917. Kreuscher, P. H.: The Treatment of Fresh Wounds, Am. J. Surg. **51**: 573, 1941.

2. Gurd, F. B., and McKim, L. H.: The Use of B. I. P. P. and Liquid Paraffin in the Treatment of Wounds, Am. J. Surg. **51**: 584, 1941. Orr, H. W.: Treatment of Compound Fractures with Special Reference to Military Surgical Procedures, Arch. Surg. **40**: 825 (May) 1940. Trueta, J.: Treatment of War Wounds and Fractures, with Special Reference to the Closed Method as Used in the War in Spain, New York, Paul B. Hoeber, Inc., 1940.

3. An Outline of the Treatment of Fractures, ed. 3, Chicago, American College of Surgeons, 1940. Medical Field Manual, F. M. 8-50, United States Army, 1940.

4. Mann, W. L., and Kaysen, R.: Experimental Aircraft-Submarine Litter and Transportation Splints, Mil. Surgeon **87**: 305, 1940.

5. Picton, L. J.: Communication, Brit. M. J. **1**: 217, 1940.

6. Hawley, G. W.: Splints Combining Skeletal Traction and Counter-Traction, J. Bone & Joint Surg. **16**: 976, 1934.

7. Waugh, R. L.: Skeletal Traction and Counter-Traction Methods in Ordinary Extension Splints in Treatment of Fractures of Long Bones, Surg., Gynec. & Obst. **62**: 1000, 1936.

8. Brown, G.: Treatment of Leg Fractures in Central China War Zone, Brit. M. J. **2**: 604, 1939.

9. McKee, G. K.: Treatment of Compound Fractures of the Leg, Lancet **2**: 38, 1940.

ing it equally applicable to fractures of the femur. For fractures in the leg two pins are used, the first through the upper part of the tibia, the second through the lower part of the tibia or through the os calcis, as desired. After manual traction and reduction, with the upper pin as a fixed point the final position is secured by the adjustment of the distal pin to a bolt attached to the bars of the Thomas splint (fig. 3 *a*).

For fractures of the femur a single pin is used, passed through the lower part of the tibia, and traction is exerted in one of two ways: (1) by means of a weight over the foot of the bed, with counter traction against the ischial tuberosity, or (2) by elevation of the foot of the bed and use of the body weight as traction against a fixed point distally (fig. 3 *b*). The use of an inclined plane bed (fig. 4) set on rollers to increase the efficiency of the pull of body weight has been suggested by Hendry and Naughton Dunn. The bed could take the place of a litter or stretcher if necessary. Anteroposterior displacement is adequately controlled by proper slings attached to the lateral bars of the Thomas splint. This method would not be applicable to fractures occurring in the supracondylar area of the femur.

Russell's form of traction has been used to some extent in this country, but its use in the presence of a

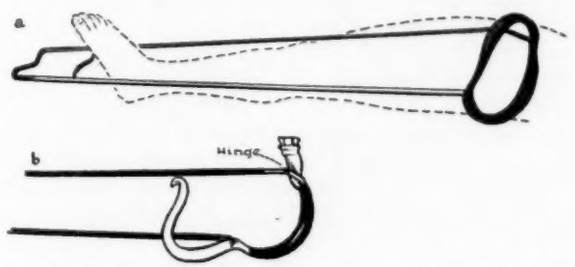


Fig. 1.—Open splints for lower extremities: *a*, Thomas ring splint; *b*, Keller-Blake half ring splint.

compound wound is not justified, in my opinion, because it offers too great an obstacle to the proper care of necessary dressings.

No criticism of the commonly used balanced traction in open splints is intended. Certainly the value of this method under proper control cannot be denied, particularly when splinting originally has been aided by some form of internal fixation so that mobilization of adjacent joints may be encouraged.

Compound wounds of the upper extremity have usually been supported during emergency transportation in a hinged Thomas ring splint, the so-called Murray modification, which conforms more readily to the shape of the axilla (fig. 5, *a*). Its use is standard at present according to most authorities in the United States. Interestingly enough, the hinged splint has not been considered entirely satisfactory by surgeons recently engaged in the treatment of casualties overseas.

Wilson [10] said: "I personally question the advisability of using the Thomas arm splint in the case of fractures of the upper extremity. Since most patients will be ambulatory, they would be much more comfortable if their arms were supported by ladder splinting and a sling." (See figure 5, *c*.) Eloesser [11] gave the same impression from his experience in Spain.

10. Wilson, P. D.: Personal communication to the author.
11. Eloesser, L.: Treatment of Compound Fractures in War, J. A. M. A. **115**: 1848 (Nov. 30) 1940.

Certainly continuous traction is not nearly so important for the upper extremity as for the lower extremity, so that semirigid fixation of the arm to the trunk should be entirely adequate.

When a decision is made to use frequent dressings or irrigations after surgical intervention, probably the

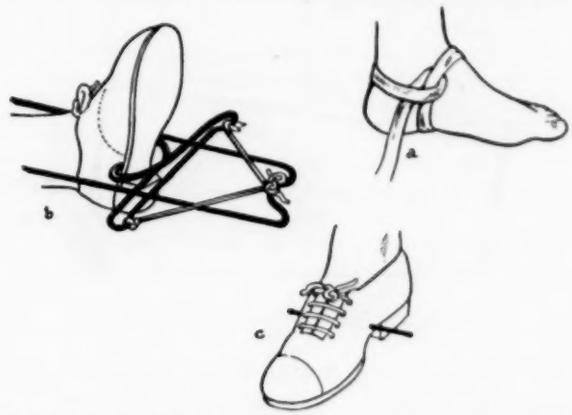


Fig. 2.—Transportation traction: *a*, clove hitch; *b*, Millbank clip; *c*, skewer.

best method available for external fixation in the upper extremity is balanced suspension, with skeletal traction when indicated. Since it is rarely necessary to exert any great amount of traction on the humerus, a form of traction apparatus for ambulatory patients is available. The Jones traction splint (fig. 5, *b*), an airplane splint (fig. 6, *a*) or a plaster cast with an incorporated Hoke traction apparatus may be used (fig. 6, *b*).

During the past few years, particularly since the opening of hostilities in Spain, much has been written about the "closed plaster" method of external fixation of compound fractures.[12] The method is not new, both

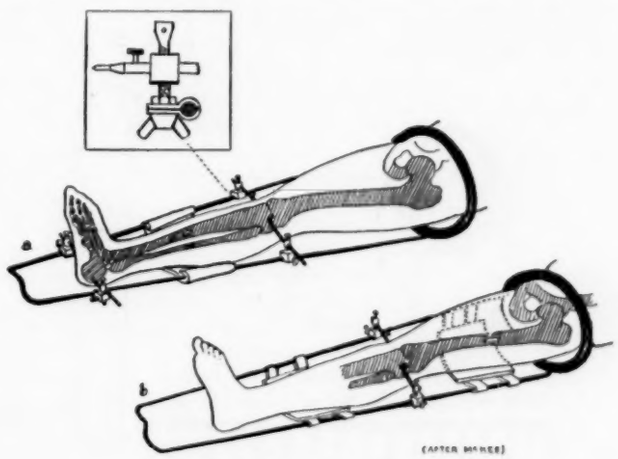


Fig. 3.—Fixed traction open splints.

Orr [13] and Morison [14] having advocated it during the first World War, and Ollier, before them. The method has become standard for the treatment of all chronic

12. Brown, J. J. M.; Ross, J. A.; Dennison, W. M., and Divine, D.: Experience at a Casualty Clearing Station, Lancet **2**: 443, 1940. Dickson, F. D.: Emergency Treatment and Transportation in Splinting of Fractures of the Femur, Am. J. Surg. **49**: 136, 1940. D'Harcourt, J.; Folch, A., and Oriol, A.: The Closed Plaster Method of Treatment: An Account of Its Use During the Spanish War, Brit. M. J. **1**: 652, 1940. Soulié, J., and Linares, C.: La cure occlusive dans le traitement des fractures de guerre, J. de chir. **55**: 22, 1940. Creer.[17]
13. Orr, H. W.: Operation and After Care of Infected Bone Areas, J Iowa M. Soc. **14**: 176, 1924.
14. Morison, R.: "Bipp" Treatment of War Wounds, London, Oxford University Press, 1918.

infections of bone. This fact unfortunately has overshadowed the importance of the use of a closed plaster cast as a method of choice in the initial treatment of a compound fracture. Certainly its value under present conditions of war cannot be denied if one can judge by the number of favorable reports being made both in this country and abroad.[15]

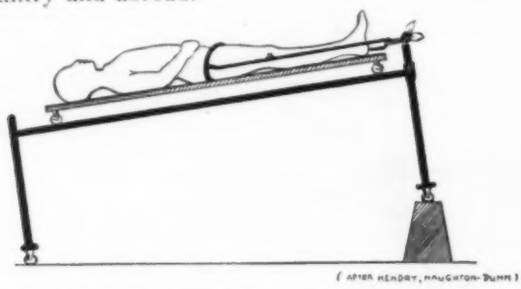


Fig. 4.—Bed traction for fractures of lower extremities.

Before considering treatment with a closed plaster cast at all, one must first realize that there are certain definite contraindications to its use: (1) severe impairment in the circulation to an extremity; (2) severe crushing injury to the soft parts, with extensive contamination necessitating an incomplete débridement; (3) suspected gas bacillus infection; (4) the necessity of proper surgical revision of the wound beyond the safe period of six to eight hours, and (5) lack of knowledge of the proper technic.

Many experimental and practical arguments have been advanced to rationalize the use of this method,[16] but I doubt that it is within the scope of this paper to do more than mention them. A few are based on avoidance of the ordeal of daily dressings; elimination of the risk of cross contamination and the development of secondary infection; early development of the best natural barrier to infection—granulation tissue—and the complete protection of that barrier from injury, and

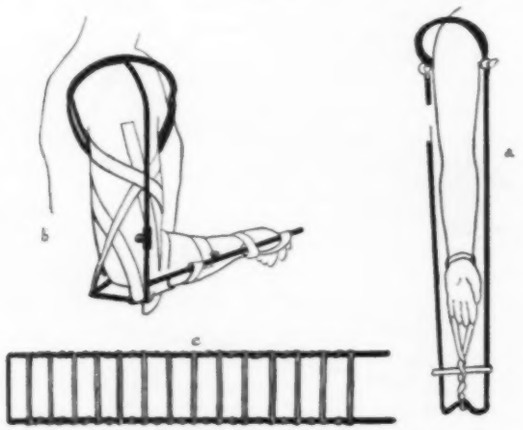


Fig. 5.—Open splints for upper extremities: *a*, Thomas hinged splint; *b*, Jones arm splint; *c*, Cramer's wire splint.

suppression of the flow of lymph and consequent protection against the absorption of toxic products resulting from tissue necrosis.

The first major prerequisite to the use of plaster is of necessity a proper knowledge of the technic of its application. This can be acquired by any one with practice and study. It can be developed in no other way. The use of padding under the plaster is more common in this country than elsewhere but is condemned by many authorities. Certainly the use of skin-tight plaster will require much more careful attention to detail in its application if the frequent but unnecessary pressure sores over bony prominences and areas where molding has been necessary are to be prevented. To speed up the time needed for its application, large pattern splints have been used recently.[17]

For the upper extremity the thoracobrachial plaster cast offers an ideal type of dressing for compound fractures. When skeletal fixation or traction is indicated it can be afforded by the use of Kirschner wires incorporated in the plaster dressing. Fractures in the forearm can be controlled in a similar fashion.

With any compound fracture of the lower extremity, particularly one in which there is comminution of the fragments, it is almost essential that some form of pin fixation be used to supplement the plaster fixation (fig. 7). Loss of position in plaster has been used

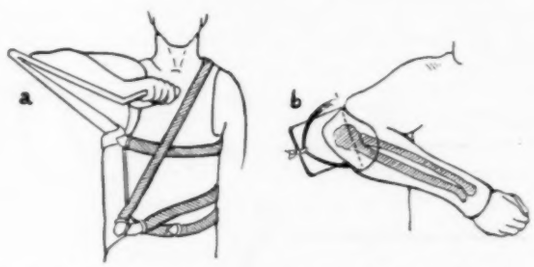


Fig. 6.—Ambulatory splints: *a*, airplane splint; *b*, Hoke traction apparatus.

as an argument against the method by some investigators,[18] but with proper additional aids this may be prevented to a large degree.

For fractures of the leg alone, the two pin method (fig. 8) is entirely acceptable,[19] and changes of plaster may be made as occasion demands without unduly disturbing either the fracture itself or the compound wound. When using two pin fixation, one should take care never to distract the fracture surfaces, since nonunion or at least delayed union may occur. This possibility should be particularly guarded against if a reduction frame is used. A frame is a great convenience but is by no means a necessity. Under ordinary circumstances reduction by traction requires no great force when the fracture is seen during the first twenty-four hours or so. The pins therefore act more as a means of preventing recurrence of shortening than as a means of furnishing skeletal traction. Many simplified methods of inserting and fixing the traction pins to obviate the need of an elaborate reduction frame have been described. The use of an outside fixed bar, as suggested by Schubert,[20] would add enough rigidity to

15. Steindler, A.: Compound Fractures of the Thigh and Leg in Military and Civil Practice, Mil. Surgeon **87**: 54, 1940. Legroux, R., and Loiselem, J.: Importance de la cytolyse dans l'infection des plaies de guerre, Mém. Acad. de chir. **66**: 272, 1940.

16. Trueta, J., and Barnes, J. M.: Immobilization in the Treatment of Infected Wounds, Brit. M. J. **2**: 46, 1940. Watson-Jones, R.: Fractures and Other Bone and Joint Injuries, ed. 2, Baltimore, Williams & Wilkins Company, 1941.

17. Creer, W. S.: Standard Pattern for Hip Spica, Lancet **1**: 9, 1941.

18. Arnaud, M.; Perves, J.; Caire, A., and Morvan, F.: Remarques sur la traitement des plaies des membres à propos d'observations recueillies sur les blesses de la guerre d'Espagne, Mém. Acad. de chir. **65**: 801, 1939.

19. Anderson, Roger: An Anatomic Method for Treatment of Fractures of the Tibia and Fibula, Surg., Gynec. & Obst. **58**: 639, 1934. Griswold, R. A.: Major Fractures of the Tibia and Fibula: An Apparatus and a Method of Treatment, Surg., Gynec. & Obst. **58**: 900, 1934.

20. Schubert, R. R.: A Simplified Instrument for Use in the Treatment of Fractures of the Leg by the Two-Pin Method, J. Bone & Joint Surg. **17**: 1060, 1935.

allow even more safety in changing the plaster at frequent intervals.

A fracture of the femur offers the greatest obstacle to proper maintenance of position in a plaster cast after primary reduction. No matter how carefully the plaster is applied, whether it is skin tight or otherwise, there is still a strong tendency for the fragments to become displaced and to override. This tendency is particularly great in the presence of any comminution at the site of fracture. Fixation with plaster must be supplemented with other fixation in many instances. A Kirschner wire or a Steinman pin may be inserted through the distal portion of the femur, the patient placed on a table and reduction accomplished in the routine fashion. Pelvic tilt and consequent relaxation at the perineum cannot be controlled without a carefully molded double spica. Even with this position may be lost. A pin is occasionally placed vertically through the trochanter region to control the tendency toward overriding and to take some of the strain from the perineum. However, with a severe compound fracture it may be necessary to change the plaster for dressing purposes within a matter of weeks, and if one keeps this eventuality in view, loss of position at the site of fracture is almost inevitable when the types of pin fixation mentioned are used.

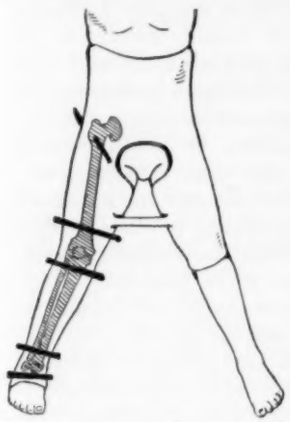


Fig. 7.—Hip spica: suggested points for pin fixation.

The Roger Anderson method of external fixation [21] with multiple pins (fig. 8, *a*) certainly has its place in the treatment of compound fractures of the femur. In itself this method allows complete rigid fixation of the fragments, and still the plaster cast may be applied or removed as indicated without fear of loss of position of the fragments. The recent addition of an outside bar holding the two upper pins to the two lower pins makes this possible. A certain amount of technical skill is required to insert the pins and assemble the apparatus properly, but this disadvantage can be readily overcome with experience and personal effort. Recent communications from England have told of the satisfactory use of the apparatus.

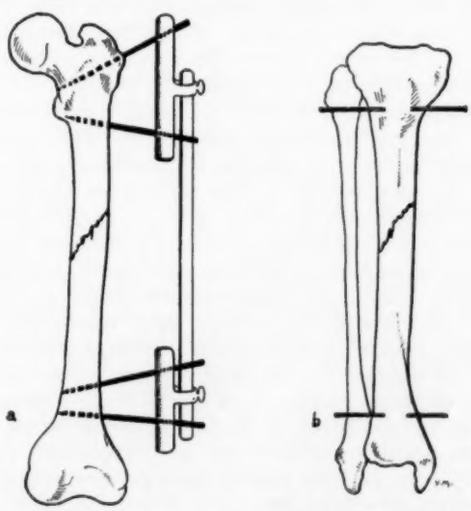


Fig. 8.—Pin fixation: *a*, Roger Anderson multiple pin method; *b*, two pin method.

21. Anderson, Roger: An Ambulatory Method of Treating Fractures of the Shaft of the Femur, Surg., Gynec. & Obst. **62**: 865, 1936.

COMMENT

Compound fractures of the long bones only have been considered. No essential changes have been suggested for the emergency transport of patients with fractures of the lower extremity. Under the pressure of war conditions, the early institution of skeletal traction has been encouraged. The use of a Thomas splint for the upper extremity has not proved entirely satisfactory.

When an open splint is desired for the treatment of compound wounds in the lower extremity, there are certain disadvantages to the use of balanced traction. It would be well to try clinically in this country the newer methods suggested.

For compound fractures of the upper extremity, fixation in a closed plaster cast is considered ideal. For the lower extremity it has been found necessary in most instances, particularly when comminution is present, to incorporate additional pin fixation to maintain the primary reduction.

ABSTRACT OF DISCUSSION

DR. H. A. SWART, Charleston, W. Va.: I should like to describe a new arm splint which I recently devised for the treatment of compound fractures of the humerus, ulna and radius. Patients treated by this splint may be ambulatory. A Kirschner wire is placed through the olecranon in fractures of the humerus, and traction is made against the body wall by means of this modified airplane splint. In compound fractures of the ulna and radius the one wire is placed through the olecranon proximally and the second wire is placed through the distal ends of the bones, making traction in a longitudinal direction. If there are fractures of the three bones, traction is made on the olecranon while at an angle of 135 degrees. In fractures of the humerus alone traction is made in line with the shaft of the bone. The angle of traction can be varied according to any position desired. It is fastened to the semicircular steel bar by means of a screw. The advantages of this splint are that the fractures can be immobilized, the wound can be easily dressed by removing the slings, and when the wounds are healed the splint can be removed and a cast applied without disturbing the fractures.

DR. FRANK J. COX, New Orleans: I should merely like to say that no essential changes have been suggested for emergency transport of fractures occurring in the lower extremity. Under pressure of war conditions, however, the early institution of skeletal traction has been encouraged. The use of a Thomas splint for the upper extremity has not proved to be entirely satisfactory. Where an open splint is desired for treatment of compound wounds in the lower extremity there are certain disadvantages to the use of balanced traction. For compound fractures of the upper extremity the closed plaster form of fixation is considered ideal. In the lower extremity it has been found necessary to incorporate additional pin fixation in order to maintain the primary reduction in most instances, particularly when the factor of comminution is present.

First Outbreaks of Poliomyelitis.—Although some difference of opinion prevails among students as to when the first recorded epidemic of infantile paralysis occurred, Badham's report of 4 cases in Worksop, England, in 1835 is commonly accepted, and no doubt at all exists as to the identity of a highly typical group of cases described by Bull in Norway in 1868.—Clark, P. F.: History of Poliomyelitis Up to the Present Time, Infantile Paralysis, 1941.

OXYGEN TENT THERAPY IN THE TREATMENT OF ECLAMPSIA

ROY E. NICODEMUS, M.D.
DANVILLE, PA.

Vast strides have been made and much has been accomplished in the last decade to reduce the incidence of the toxemias of pregnancy, especially the severest form, eclampsia. This complication of pregnancy may be said to be the end result of the unrecognized, or perhaps the untreated, milder form of the toxemias.

The nationwide maternal welfare program in effect during the past ten years is perhaps largely responsible and deserves a good share of the credit for the lowered incidence of this gravest of all complications of pregnancy. This program has stressed the necessity of early and frequent periodic antepartum examinations throughout pregnancy, together with the importance of recognizing in its earliest stage any beginning hypertension, albuminuria, edema or abnormal gain in weight. This campaign has borne fruit and has done much to make the physician "toxemia conscious" and the patient "antepartum examination conscious." However, the fact remains that in the United States approximately eleven hundred mothers lose their lives annually from eclampsia alone, not to mention an even greater number of babies necessarily sacrificed in the effort to spare mothers suffering from the late toxemias of pregnancy.

Until the underlying cause of these toxemias can be abolished or a specific found with which to cure the condition once it has developed, physicians must continue their vigilance and be unrelenting in the crusade for better antepartum care.

Today, as in recent years, it is thought that the best results of the treatment of eclampsia of pregnancy are obtained by the conservative method, which consists primarily of attempting to control the eclamptic seizures with strong sedatives and, in addition, to improve the patient's general condition sufficiently to make her a better risk for the induction of labor and the termination of pregnancy. The last-mentioned procedure, experience has taught, will do more toward the patient's restoration to health than all the other therapeutic measures combined.

STATISTICS

The mortality of eclampsia in various well regulated obstetric clinics varies from 10 to 30 per cent among the mothers and from 40 to 60 per cent among the babies.

It is the belief of many writers, as well as mine, that most patients with eclampsia who die do so more because of cardiorespiratory failure than because of the toxemia itself. Moore and Lawrence, as quoted by Stander,[1] attributed one third of the deaths in their cases of eclampsia to pulmonary edema. Therefore, any additional measure that would appreciably reduce the mortality from these causes deserves the greatest consideration.

PHYSIOLOGY

Stander [1] has stated that in eclampsia there is an increase in uric acid, a decrease in the carbon dioxide–combining power and a definite lowering of the p_H of the blood. Also, the disturbances of the blood so far noted seem to be interrelated and deficient oxidative processes probably play a major part.

When the hydrogen ion concentration of the blood tends to rise, acidosis or acidemia develops, and such a rise has been shown to exist in eclampsia. The tension of the carbon dioxide in the alveolar spaces of the lungs regulates the carbonic acid content in the arterial blood, so that a rise of alveolar carbon dioxide results in an elevation of the arterial content of carbon dioxide and carbonic acid and, therefore, an increased hydrogen ion concentration, or acidosis. The acidemia which initiates these changes can best be combated by inhalations of higher concentrations of oxygen than are normally present in the atmosphere. In this manner the increased alveolar carbon dioxide can be reduced or displaced by oxygen, which in turn will lower the carbon dioxide content of the blood and overcome the acidosis.

With pneumonia, in which the exudative changes in the lungs are responsible for anoxemia, or with pulmonary edema, whether from cardiac or pulmonary disease, the success of the administration of oxygen is often spectacular. Anoxemia increases the permeability of the pulmonary epithelium to fluids and consequently the pulmonary edema. In other words, a vicious circle is established—edema inducing anoxemia and the latter increasing the edema—which is broken by the administration of oxygen. Consequently one can understand the prompt improvement in some persons with eclampsia, in whom similar conditions exist, when oxygen tent therapy is instituted.

SIGNS AND SYMPTOMS

Some of the signs and symptoms commonly associated with eclampsia are a bluish discoloration of the face and the extremities, amounting to actual cyanosis in some cases, together with dyspnea, restlessness, delirium, tachycardia and coma. All these point toward subacute anoxia. At least, when this syndrome is present in any other illness the presence of anoxia is suspected, so why not in eclampsia?

Stroganoff and De Lee, in their early writings, pointed out the advantage to persons with eclampsia of oxygen inhalations instituted immediately after convulsive seizures to help restore normal respirations and a healthy color. In a careful perusal of the literature on the treatment of eclampsia I could find no reference to the use of oxygen other than this one to intermittent inhalations. Although small amounts of oxygen administered intermittently to patients with this disease may have some benefit, it is doubtful that they are sufficient actually to change the blood chemistry. On the other hand, continuous oxygen tent therapy with proper air conditioning, combined with the conservative or modified Stroganoff treatment, in my experience appears to have played a major part in the recovery of a number of patients with eclampsia.

With the conservative or modified Stroganoff method, one is really heaping additional insult on the respiratory system by the administration of morphine and chloral hydrate, both of which are strong respiratory depressants. In other words, an eclamptic patient who is already showing signs and symptoms of anoxemia due to the chemical and respiratory changes incident to the disease is being still further embarrassed by having her respiratory center more deeply depressed by these drugs. As a result the respirations are diminished in volume and number and a still greater degree of anoxemia develops.

From the Department of Obstetrics, the George F. Geisinger Memorial Hospital.

Read before the Section on Obstetrics and Gynecology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 6, 1941.

1. Stander, H. J.: Williams Obstetrics, ed. 7, New York, D. Appleton-Century Company, Inc., 1936, pp. 749 and 767.

I do not wish to advocate abolition of the conservative method of treatment; on the contrary, I strongly favor it until something better supplants it. These sedative drugs are essential to reduce the nervous irritability and thereby lessen the severity and the number of convulsive seizures. However, I do wish to point out the added necessity of continuous oxygen therapy to combat the lowered oxygen concentration when this method of treatment is employed.

TREATMENT

The following material is a résumé of the treatment of 13 patients with eclampsia admitted to my service during the last four years. Two of these were from the antepartum clinic of the Geisinger Memorial Hospital, and the other 11 were referred by outside physicians. All 13 were treated by the conservative or modified Stroganoff method, together with restriction of fluids to establish the water balance, as recommended by Arnold and Fay. In addition, each patient was placed in an oxygen tent as soon as possible after admission to the hospital and kept there until the eclampsia had subsided and the patient had reacted sufficiently to be able to take nourishment and converse in a rational manner. No other form of oxygen therapy was administered.

Considerable care was exercised to maintain within the tent a temperature between 55 and 65 F., a humidity between 40 and 60 per cent and an oxygen concentration at or above 50 per cent.

The striking feature about this treatment was the rapidity with which the patients recovered consciousness and became rational. In addition, there was an earlier subsidence of restlessness, delirium, cyanosis and dyspnea than I had ever witnessed before oxygen was utilized.

Unfortunately, the carbon dioxide–combining power of the blood before and after oxygen therapy was instituted was not determined in the majority of the 13 cases; consequently, no reliable data can be offered on this point.

Three patients had severe pulmonary edema similar to that observed in the terminal stages of lobar pneumonia and congestive heart failure. After receiving oxygen therapy for eight or more hours they were much improved and ultimately recovered.

The length of time oxygen was administered varied from twenty to seventy-six hours, the average being thirty-eight hours. Only 1 patient had to be replaced in the tent because of headache and twitching after oxygen therapy had been discontinued for nine hours.

The greatest number of convulsive seizures that any one patient had after the combined treatment was begun was five, and 2 patients had no more convulsions.

All 13 patients recovered. However, in 1 a psychosis developed before she left the hospital, and she had to be transferred to an institution for persons with mental disease, from which she was discharged as recovered five months later.

Of the 8 cases in which the diagnosis was antepartum and/or intrapartum eclampsia, delivery was spontaneous in 4 during the course of the combined conservative treatment. Two of the remaining 4 patients had induction of labor by artificial rupture of the membranes one week after the eclampsia had subsided. The other 2 were primiparas with firm and uneffaced cervixes on whom it was deemed advisable to perform low cervical cesarean sections on the sixth and ninth days, respectively, after subsidence of all acute eclamptic symptoms.

There were, in all, 9 living babies born.

From the observations reported it would seem that anoxia plays an important part in eclampsia, that oxygen therapy can and should be utilized to help restore the p_H of the blood to normal and that such therapy offers patients with eclampsia a far better chance for recovery than they have heretofore had.

SUMMARY

Evidence points to the existence of anoxia in eclampsia, as manifested by the signs and symptoms in addition to the blood chemistry.

Oxygen therapy is rational treatment for all forms of anoxia.

Thirteen patients treated by the conservative modified Stroganoff method in conjunction with continuous oxygen therapy completely recovered, and 9 living babies were born.

The interval between the onset of eclampsia and the subsidence of symptoms was much shorter than it had been before the use of oxygen.

ABSTRACT OF DISCUSSION

DR. THADDEUS L. MONTGOMERY, Philadelphia: The excellent results of oxygen tent therapy in eclampsia have been demonstrated by Dr. Nicodemus in a small group of cases. A series of 13 cases has limited statistical significance, but it is difficult to obtain a large number. Eclampsia is becoming so rare, for instance, that in teaching institutions one has to employ moving pictures to demonstrate to students the classic symptoms. Recently succeeding Dr. Jesse O. Arnold on his retirement from a teaching institution which has done considerable work on the dehydration treatment of eclampsia, I have had thus far no cases of this disease to study. Sooner or later the cases will come. When they do, I shall be inclined to incorporate the oxygen tent in our methods of therapy, for the procedure seems logical and well founded on physiologic principle. Hofbauer called attention to the occurrence of anoxemia in eclampsia in 1933, and subsequent studies point regularly to its importance in the tissue pathology. It is surprising that more attention has not been paid to these observations in the clinical treatment. For this reason, we are indebted to Dr. Nicodemus for focusing attention on this important adjunct in therapy. I suspect that good nursing, excellent medical supervision and judicious obstetric procedure all have played their part in the excellent results achieved. Fully developed eclampsia is the dramatic manifestation of distraught function in vital parenchymatous organs. It is the combination of a vicious circle of disturbed physiology characterized by alteration in endocrine balance, irritability of the sympathetic nervous system, arterial spasm, venous stasis, capillary congestion and serum transudation, intracellular and extracellular edema, acidosis and a cellular death. If we knew the peculiar X factor of pregnancy which was responsible for the onset of such physiologic disturbance we might do much better with prevention. But, faced with the fully developed lesions which constitute the substance of Dr. Nicodemus's study, it is doubtful whether such knowledge of itself would be of any avail. We are faced with a situation in which certain substantial steps of an empirical nature must be taken to redirect perverted cellular function. Several parallel measures are available for employment in the eclamptic patient: general nerve sedation, stimulation of the excretory organs, veratrum viride to relax the vascular tree, dehydration, and now oxygen tent therapy. Each of these methods of treatment strike at some point in the vicious circle of disturbed cellular activity, many of them rather successfully, particularly when due regard is rendered to the patient as a whole and conservative practice is employed in the obstetric delivery. With the modified Stroganoff treatment, our mortality at Jefferson was a trifle over 6 per cent. The results reported by Arnold and Fay were about the same. With the addition of oxygen tent therapy, I believe we can do better.

DR. ROY E. NICODEMUS, Danville, Pa.: I am well aware of the small series of cases that I have reported, and I hope you will all take that into consideration.

THE SYNTHETIC ESTROGEN DIETHYLSTILBESTROL

CLINICAL AND EXPERIMENTAL STUDIES (II)

CYRIL M. MacBRYDE, M.D.
DANTE CASTRODALE, M.D.
ELLEN LOEFFEL, M.D.
AND
HAROLD FREEDMAN, M.D.
ST. LOUIS

In the relatively short time since the announcement in 1938 of the synthesis of diethylstilbestrol by Dodds and his co-workers [1] there have been a large number of reports of its use in clinical and experimental studies. An excellent review of the clinical literature has recently appeared.[2] There seems to be general agreement among practically all clinical observers that diethylstilbestrol is a very potent estrogen, which is capable of reproducing all the known physiologic effects of the natural estrogens and of relieving symptoms in women suffering from estrogen deficiency. Nausea and occasional vomiting have occurred in a small percentage of patients treated by the majority of workers. A few observers [3] have, however, reported a high incidence of untoward effects and have therefore questioned the advisability of its clinical use. A year ago we [4] summarized our clinical and experimental studies at the end of one and one-half years' investigation of diethylstilbestrol. At that time we concluded that the drug produced a high percentage of satisfactory therapeutic results but needed further study before being released for general use. Our own continued studies, when correlated with those of others, now permit certain conclusions not possible a year ago. In addition we have evolved a technic in the clinical use of diethylstilbestrol which seems much superior to that previously employed. This paper presents the summary of two and one-half years' clinical and experimental study of this synthetic estrogen. We now feel that diethylstilbestrol should be released for therapeutic use under careful medical supervision, and we present certain suggestions concerning its use which should prove valuable to the physician prescribing it.

CLINICAL MATERIAL AND METHODS

Since March 1939 we have studied the response to diethylstilbestrol therapy of 202 women with estrogen deficiency. One hundred and fifty case studies are analyzed in this report, the remainder being not sufficiently prolonged or complete for our purposes. Each of these 150 women has received diethylstilbestrol or diethylstilbestrol dipropionate intermittently or continuously over a period of at least three months. Eighty-four were suffering from symptoms of spontaneous menopause, 58 from artificial menopause following operative or radiation therapy, and 8 were eunuchoid young women with amenorrhea and symptoms of primary hypogonadism. No patient was treated who did not fulfil these two criteria: (1) symptoms severe and characteristic of hypoestrinism and (2) vaginal smears of the inactive castrate type.

Fifty-six of the 150 have been under treatment for three months or longer, 56 between six and twelve months, and 38 for twelve months or longer. We no longer give diethylstilbestrol by injection, because it is highly effective orally. The dosage we employed in the early part of our studies has been gradually reduced, and we have encountered a correspondingly decreased incidence of nausea. In addition to reducing the size of the individual dose, we have adopted the principle of interrupted, rather than continuous, treatment, which of course results in a much smaller total dose per month. Whereas the majority of our patients previously were given 1 mg. daily throughout the month, the majority now receive 1 mg. daily for two weeks, and treatment is omitted for two weeks. Instead of 28 mg. per month, the average patient now takes 14 mg.

This principle of therapy was adopted for several reasons: 1. Prolonged excessive bleeding often occurred during the continuous therapy and was almost certain to follow sudden cessation of treatment. 2. The time of such bleeding could not be predicted. With the interrupted system, however, the artificial menstruation occurs from five to twelve days after the drug is stopped and lasts from three to seven days, as a rule. 3. Subjective improvement persisted throughout the month, in the majority of patients, in spite of interruption of the medication. 4. The vaginal smears only gradually regress, usually being 2 plus to 4 plus at the end of two weeks without treatment. 5. The psychic effect of regular recurrent vaginal bleeding in the young castrates and primary hypogonadal amenorrheic patients was striking and gratifying. In the older, menopause patients the dose can be lowered to a point at which the unwanted withdrawal bleeding does not occur. 6. The normal estrogen cycle is imitated by interrupted treatment. Presumably interrupted estrogen therapy would more nearly simulate the normal ovarian effects on the uterus and breasts and would reduce any tendency estrogen therapy might have to stimulate neoplastic growth.[5]

Vaginal smears were made at intervals of one week. Subjective responses were evaluated as closely as possible, and an attempt was made to correlate them with the vaginal smears and relate them to the dosage.

On 31 patients who had received the largest doses over considerable periods of time, liver function tests were performed. On 42 patients red blood cell and white blood cell counts, hemoglobin determinations, differential white cell counts and blood platelet counts were done at intervals. Repeated urine examinations were done in 76 cases.

RESULTS

1. *Subjective Effects.*—Relief of hypogonadal symptoms seemed as good as that obtained with comparable doses of estrogens derived from natural sources. The improvement was striking as concerns hot flushes, emotional instability, headache and insomnia. Nausea and

The diethylstilbestrol used in these studies was supplied by the Winthrop Chemical Company.

From the Department of Medicine, Washington University School of Medicine, the Washington University Clinics and the St. Louis City Hospital.

1. Dodds, E. C.; Goldberg, L.; Lawson, W., and Robinson, R.: Estrogenic Activity of Certain Synthetic Compounds, Nature, London **141**: 247 (Feb. 5) 1938.

2. Morrell, J. A.: Summary of Some Clinical Reports on Stilbestrol, J. Clin. Endocrinol. **1**: 419-424 (May) 1941.

3. Schorr, Ephraim; Robinson, F. H., and Papanicolau, G. N.: A Clinical Study of the Synthetic Estrogen Stilbestrol, J. A. M. A. **113**: 2312-2318 (Dec. 23) 1939. Salmon, U. J.; Geist, S. H., and Walter, R. I.: Evaluation of Stilbestrol as a Therapeutic Agent, Am. J. Obst. & Gynec. **40**: 243-250 (Aug.) 1940.

4. MacBryde, C. M.; Freedman, Harold; Loeffel, Ellen, and Castrodale, Dante: The Synthetic Estrogen Stilbestrol: Clinical and Experimental Studies, J. A. M. A. **115**: 440-443 (Aug. 10) 1940.

5. Loeb, Leo: The Significance of Hormones in the Origin of Cancer, J. Nat. Cancer Inst. **1**: 169-195 (Oct.) 1940.

a tendency to vomiting were relieved in 10 cases. Pruritus vulvae was relieved in 20 of 26 cases. Increased libido and more satisfactory sexual relations were reported by 31 patients. General improvement in strength and energy occurred in 84 of 97 patients citing lassitude as a chief complaint. In summary, of the 150, only 4 patients had poor results; in 18 the results were fair, in 128 good.

Nausea occurred in 18 cases, or 12 per cent. Patients receiving interrupted treatment had much less tendency to nausea than those being treated continuously. Of 45 patients receiving continuous medication, nausea occurred in 9, or 20 per cent, while of 105 patients receiving the drug for only fourteen to twenty-one days each month only 9, or 8.6 per cent, experienced nausea. In 14 of the 18 cases, reducing the dose or instituting interrupted treatment caused disappearance of the nausea. In the 4 patients giving poor results to treatment, nausea was persistent despite these maneuvers, and vomiting occurred. Two of these 4 patients experienced good therapeutic results after implantation of diethylstilbestrol pellets [5a] and nausea did not return. Nausea and vomiting necessitated discontinuance of treatment in the other 2 cases.

We have observed no other untoward effects from diethylstilbestrol. None of our patients have had jaundice, cutaneous rash or abdominal distress.

2. *Objective Effects.*—Within fourteen to twenty-one days the inactive, castrate type vaginal smear will usually change to one showing good estrous response when the patient is given 1 mg. daily. When the treatment is omitted for seven to fourteen days, the smear regresses from a 3 plus or 4 plus response to a 2 plus. After the patient has been receiving interrupted treatment for one or two months, 1 mg. daily by mouth for seven to fourteen days is usually sufficient to bring the smear change from the 2 plus or moderate estrous response to the 4 plus or complete result.

In a few cases return of the vaginal smear toward the inactive type was more rapid. In such cases almost complete regression of the smear was present after seven days without treatment, and symptoms had recurred. In these cases the two week schedule was not feasible and treatment gave more satisfactory effects on the symptoms and on the vaginal smears if it was continuous or if diethylstilbestrol was given for three weeks and omitted for one week. In 93 of the 150 patients the two week schedule was successful. In 12 instances the three week treatment seemed preferable. Nine patients complained of recurrence of symptoms whenever treatment was interrupted, even for a few days, although the vaginal smears remained actively estrous in type. It is notable that we found this to be true: the more continuous the treatment, the smaller the effective daily dose. Seventy-five of the 93 patients on the two week schedule required 1 mg. daily for the two weeks to give optimal relief of symptoms and vaginal smear response. Eighteen were controlled with 0.5 mg. daily. Of the 12 patients requiring the three week treatment, only 3 needed 1 mg. daily, 9 doing well with 0.3 mg. to 0.6 mg. a day. Of the 9 patients needing uninterrupted treatment, only 2 required 1 mg. daily, the rest being well controlled with 0.2 to 0.6 mg. daily. It can be seen that the total monthly dose necessary to give optimal subjective and objective results tends to approach a constant of 14 to 20 mg. in the majority of cases. There is considerable variation, however, between individual patients, several requiring as little as 7 mg. a month, others requiring as much as 30 mg.

We feel that the subjective results are more important than the exact degree of estrous response in the vaginal smear. When excellent relief of symptoms is obtained with a dose producing only a 2 plus or 3 plus smear we have found no advantage in increasing the dose to a point producing a 4 plus or full estrous response. There are certain objections to giving a larger dose than that required for good symptomatic relief, the most obvious of which is that the incidence of nausea is increased. The expense would be greater. Withdrawal of therapy, the ultimate aim in all cases, would probably be further postponed and might be made more difficult. In 12 of the 150 cases a 2 plus smear coincided with good symptomatic relief, in 109 a 3 plus, and in only 29 was a 4 plus reaction necessary.

STUDIES OF TOXICITY

1. *Liver Function Studies.* — Thirty-eight patients who had received the largest doses and had been treated for the longest periods had repeated estimations of liver function by the hippuric acid synthesis test and by bromsulphalein excretion. In addition, repeated determinations of the serum icterus index were performed. In no case were we able to demonstrate impairment of liver function. Most of these liver function studies were performed in the earlier part of our clinical studies, when we were using large doses.[4] The average daily dose in this group was 2 mg. daily, or 60 mg. monthly, as compared with our present usual therapeutic doses of 14 to 20 mg. a month. Four patients showed no impairment of hepatic efficiency as measured by these tests after taking an average of 5 mg. daily for over four months, and 2 others showed no changes after 700 mg. taken in six months.

The evidence would seem to indicate that diethylstilbestrol in therapeutic doses is safe as far as hepatic function can be measured by such tests. It is important also to note that, among the 200 cases treated by us, no liver disease had developed even though some patients have been treated almost continuously for two years. Evidence that diethylstilbestrol in huge doses will cause microscopic indications of hepatic damage in experimental animals has caused some concern among clinicians. Work in our laboratories [6] has shown that large doses of estradiol, estradiol benzoate or estrone will also cause toxic liver disturbance and that with comparable estrogenic doses the changes produced by these "natural" estrogens are indistinguishable from those occurring with diethylstilbestrol. It seems likely that any highly potent estrogen, when given in doses much greater than those in the therapeutic range, might conceivably cause changes in the human liver but that the synthetic estrogen diethylstilbestrol is no more apt to do this than the "natural" estrogens.

2. *Blood Studies.*—No abnormality attributable to diethylstilbestrol therapy has been noted in repeated counts of the erythrocytes, leukocytes or thrombocytes. No tendency to purpura was noted. The uterine bleeding previously described was the only type of hemorrhage produced. We have observed in studies on dogs that anemia, thrombocytopenia and serious hemorrhagic

5a. MacBryde, C. M.; Freedman, Harold; Loeffel, Ellen, and Allen, Duff: Estrogenic Therapy by Implantation of Stilbestrol Pellets, Proc. Soc. Exper. Biol. & Med. **43**: 212-214 (Jan.) 1940.

6. Castrodale, Dante; Helwig, E. B.; Bierbaum, O., and MacBryde, C. M.: Endocrinology, to be published.

manifestations with ultimate hypoplastic changes in the bone marrow can be produced by diethylstilbestrol but that exactly similar changes are also produced by comparable doses of the "natural" estrogens.[7] Since doses per unit of body weight were much larger in the experimental animals, it is perhaps not remarkable that no such blood changes have yet been reported in patients receiving "natural" or synthetic estrogens.

3. *Urine Studies.*—Urine examinations performed repeatedly at intervals revealed no changes attributable to the therapy.

COMMENT

Careful study of the effects of diethylstilbestrol on 150 women over a period of two and one-half years has enabled us to evolve a practical scheme of interrupted therapy which is highly successful in most cases. Further studies of possible toxic effects have been reassuring, since no serious toxic results have been elicited, and the only objectionable symptom, nausea, has become much less frequent. It should be noted that nausea is frequently relieved by diethylstilbestrol. We have also observed nausea after treatment of patients with other highly potent oral and parenteral estrogens derived from natural sources. It seems likely from the evidence at present available that diethylstilbestrol may cause nausea more often than other estrogens, but this may possibly be explained by the high potency, ease of administration, cheapness and much wider use of the new synthetic material.

Oral therapy is so successful that injection treatment with diethylstilbestrol is seldom advisable. Prolonged estrogenic effect with good subjective response may be obtained by pellet implantation,[5a] and in some cases nausea may thus be avoided.

CONCLUSIONS

1. Diethylstilbestrol therapy gave good relief of hypogonadal symptoms to 128 of 150 women (85 per cent), fair to 18 (12 per cent), poor to 4 (2.6 per cent).

2. Interrupted rather than continuous therapy is preferable for most patients. Diethylstilbestrol 1 mg. daily by mouth for fourteen to twenty days followed by omission of medication for seven to fourteen days was the most successful clinical program of treatment employed in this series.

3. Complete 4 plus vaginal smear response is not necessary in the majority of cases to insure maximum subjective improvement. The minimal dose giving the best symptomatic response should be the therapeutic dose. In many instances 0.3 to 0.5 mg. daily for two to three weeks is an adequate monthly requirement.

4. Liver function studies, blood studies and urine studies failed to reveal evidence of toxic effects.

5. The only unpleasant result of treatment, nausea, occurred much less frequently with interrupted therapy. On continuous treatment nausea occurred in 20 per cent of cases, on interrupted treatment in only 8.6 per cent.

6. Authorities have been properly conservative about withholding this potent estrogen from unrestricted use. Sufficient information now is available to lead us to conclude that diethylstilbestrol should be released for therapeutic purposes directed by the physician. It should be obtainable only on prescription by the physician. The lowest doses giving good relief of symptoms should be employed.

7. MacBryde, C. M.; Castrodale, Dante; Helwig, E. B.; Bierbaum, O., and Poe, J. S.: Comparative Effects of Synthetic and Natural Estrogens on Blood, Liver and Bone Marrow, J. Clin. Investigation **19:** 773 (Nov.) 1940.

THE EFFECT OF ESTROGENS ON THE MICROSCOPIC APPEARANCE OF THE LIVER

ROBERT S. TEAGUE, M.D.

NEW YORK

The clinical use of the synthetic estrogen diethylstilbestrol is accompanied by untoward symptoms of nausea and vomiting in a considerable number of cases. The explanation of these symptoms and the extent of toxicity of the substance are still matters of debate, but the question has been raised whether the drug may produce liver damage.[1] Recently there have appeared a number of studies on the toxicology of diethylstilbestrol in experimental animals, and a wide variety of interpretations has been placed on the microscopic changes produced in the liver by the drug. For example, some have reported hepatitis,[2] fatty degeneration and toxic necrosis [3] while others have found no hepatic lesion.[4] The reports have often included studies of the effect of the natural estrogens on the liver, with similar findings.

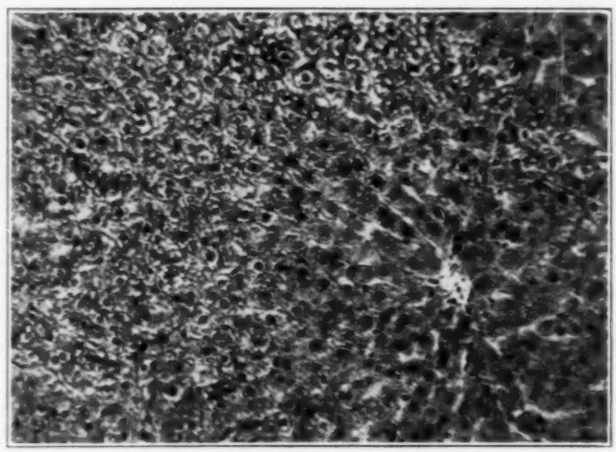


Fig. 1.—Section of rat liver; hematoxylin and eosin stain. Low power view showing the peripheral distribution and size of the vacuoles. This degree of vacuolation is more pronounced than that usually seen. The animal received diethylstilbestrol in a daily oral dose of 1 mg. per kilogram for twenty-two days.

In an investigation of the toxicology of diethylstilbesterol in rats, to be reported elsewhere, the microscopic changes in the liver have been examined with particular interest. Large or even moderate doses (0.01 mg. per kilogram daily) of diethylstilbestrol or estradiol over periods of two to twelve weeks were found to produce a characteristic change in the hepatic cell. In sections stained with hematoxylin and eosin this change is seen as a perinuclear vacuolation of varying extent. The cytoplasmic border of the vacuole is roughened. The cells located at the periphery of the hepatic lobule are principally affected; the more centrally located cells remain relatively unchanged. Cloudy swelling is also present. Furthermore, evidences of regeneration are seen: variation in size of the hepatic cells, binucleated

Aided by a grant from the David Trautman Schwartz Research Fund.

From the Department of Pharmacology, Tulane University of Louisiana School of Medicine.

1. Shorr, Ephraim; Robinson, F. H., and Papanicolaou, G. N.: A Clinical Study of the Synthetic Estrogen Stilbestrol, J. A. M. A. **113:** 2312 (Dec. 23) 1939.

2. Selye, Hans: Canad. M. A. J. **41:** 48 (July) 1939.

3. Grumbrecht, Paul, and Loeser, Arnold: Klin. Wchnschr. **18:** 1195 (Sept. 2) 1939.

4. Teague, R. S.: J. Pharmacol. & Exper. Therap. **69:** 306 (Aug.) 1940. Richards, R. K., and Keuter, Kenneth: Am. J. Physiol. **133:** 423 (June) 1941.

cells, variation in the staining quality of the nuclear chromatin and infrequently a mitotic figure. While an occasional cell is disintegrated, no foci of necrosis are seen, nor is there any evidence of inflammation. Mallory stains failed to show any cirrhosis even after eighty-six days of continuous treatment with large doses of diethylstilbestrol.

The general appearance of the hematoxylin and eosin material might suggest hydropic or fatty degeneration. Attempts, therefore, were made to reveal the presence of fat. Frozen sections of fresh formaldehyde fixed tissue were stained with sudan III.[5] The results were negative; the vacuoles remained completely unstained. Further studies on livers fixed in Maximow-osmic fluid were similarly negative. As controls, the livers of rats previously injected with carbon tetrachloride were treated with the same technics; by both methods fat content was definitely demonstrated. However, when tissue fixed in absolute alcohol was stained with Best's carmine and Mayer's hemalum the presence of glycogen was clearly revealed in the vacuolated cells. The carmine stain was limited to the vacuolated areas, where it took the form of coarse pink clumps interspersed in the vacuoles rather than in discrete small granules in the cytoplasm. Glycogen was demonstrated in the livers of rats whether treated with diethylstilbestrol or with estradiol. The slides were compared with similar stains of liver sections from a rat which had received dextrose a few hours previously. The microscopic appearance was very similar. Vacuoles of moderate size were found which contained the carmine-staining granules. Even the appearance of the vacuoles in the hematoxylin and eosin preparations was similar, except that instead of being located peripherally the vacuoles were distributed generally throughout the lobule in this case. Liver glycogen of dietary origin is first deposited in and first removed from the center of the lobule;[6] apparently under the influence of estrogen the glycogen in the periphery of the lobule is held in the cell while the more labile central glycogen is readily metabolized.

Fig. 2.—High power view of liver cells stained for glycogen with Best's carmine and Mayer's hemalum. There is only a rim of cytoplasm present, whereas the space around the nucleus consists of a large vacuole filled with carmine-staining granules.

This suggestion may account for the difference in distribution of glycogen in the liver lobule in the two conditions. When iodine stains for glycogen were attempted on liver sections of both estrogen-treated and sugar-fed animals, very poor preparations were obtained. The presence of glycogen in the vacuoles would seem to eliminate the consideration of hydropic degeneration as an interpretation of the hepatic changes.

It is felt that all the histologic findings in the liver after estrogens may be related to this accumulation of glycogen in the hepatic cells. This view is supported by the studies of Janes and Nelson,[7] who showed chemically that liver glycogen is increased after treatment with estrogen. The rapid regeneration of the hepatic cells may be considered as a response to the excessive demand on the liver imposed by the estrogen stimulus to deposit glycogen. The absence of cirrhosis supports this point of view. The findings speak against the microscopic changes as being primarily degenerative. It would seem that both the natural estrogens and the synthetic substitutes do not produce a serious toxic effect on the liver of the rat.

525 East Sixty-Eighth Street.

5. Dr. Emil Liebmann performed this procedure for the author.
6. Mann, F. C.: Am. J. Digest. Dis. & Nutrition **4**: 355 (Aug.) 1937.

THE STRENGTH OF DIGITALIS IN CLINICAL USE

A WARNING

EDWARD F. BLAND, M.D.
AND
PAUL D. WHITE, M.D.
BOSTON

Several instances of serious digitalis intoxication and many of mild poisoning by the drug, even in the practice of the best hospitals and of experienced clinicians, have during the past year called our attention to the need of a brief but forceful note of clarification and of warning.

There is at present considerable confusion with regard to the potency of digitalis used in medical practice. Two factors are chiefly responsible for this state of uncertainty: (1) the adoption by the United States Pharmacopeia in 1936 of an official U. S. P. XI digitalis powder with a potency considerably greater than the U. S. P. X digitalis employed prior to 1936 and (2) the acceptance of the U. S. P. XI unit by some, but not by all, of the nationally known pharmaceutic firms.

THE STANDARDIZATION OF DIGITALIS

The latest revision of the United States Pharmacopeia (eleventh), which became official on June 1, 1936, adopted the international standard powder of digitalis as a reference basis in place of crystalline ouabain for reasons outlined by Edmunds and his co-workers[1] as follows:

Digitalis offers special difficulties, as it contains no active principle which is suitable for use as a standard. Accordingly, in the United States Pharmacopeia IX, which was issued in 1916, and the first pharmacopeia in which biological standardization was recognized officially, crystalline g-strophanthin (ouabain) was adopted as the standard for members of the digitalis group of drugs. This glucoside was selected for the reason that pharmacologically it belongs to the digitalis series and chemically it is easily identified by its physical charac-

7. Janes, R. G., and Nelson, W. O.: Proc. Soc. Exper. Biol. & Med. **43**: 340 (Feb.) 1940.

From the Massachusetts General Hospital.

That portion of the present report dealing with the technical aspects of digitalis standardization lies largely in the field of pharmacology. In this connection we are indebted to Prof. Otto Krayer of the Department of Pharmacology of the Harvard Medical School for his collaboration in the preparation of this report.

1. Edmunds, C. W.; Moyer, C. A., and Shaw, J. R.: The United States Pharmacopeial Standard Digitalis Powder, J. Am. Pharm. A. **26**: 290, 1937.

teristics such as solubilities, melting point, etc. For the next twenty years thereafter ouabain served as the standard in the United States for digitalis and its allies, and, on the whole, it proved quite satisfactory. However, at the Edinburgh Conference held in 1924 under the auspices of the Health Committee of the League of Nations, it was pointed out that, while ouabain was satisfactory as a standard for preparations of strophanthin, it was not suitable as a standard for digitalis for international usage. This was due to the different species of frogs which are in use in European countries and to the different methods of assay which are employed, factors which make it practically impossible to get comparable relationships between ouabain and digitalis in assays carried on in different countries.

Accordingly, at this conference it was decided to investigate the possibility of using a powder of digitalis as a standard for that drug, and Professor Magnus of Utrecht undertook its preparation, using the Hatcher-Brody cat method of assay as it had been modified at the University of Utrecht. The Edinburgh experimental powder, when injected in the form of an infusion, proved fatal to cats in a dose of 91.1 mg. per Kg. of body weight of cat, this powder containing 10.9 cat units in each gram of powder. As a result of this work, the Geneva Conference held the next year adopted as an international standard a powder of digitalis which should be prepared by Professor Magnus and be within 10 per cent of the potency of the Edinburgh powder. Such a powder was secured by mixing ten different lots of powder obtained from various sources, and when these were finally blended and assayed on 23 cats, the fatal dose was 89.7 mg. per Kg. of cat. Each gram, therefore, contained 11.1 cat units. This powder sealed in ampules containing about 3 Gm. each serves today as an international standard. An International Digitalis Unit is defined as being the equivalent in potency of 0.1 gram of the international standard powder, and the United States Pharmacopeia Digitalis Unit is identical in potency with the international unit. The international standard powder is stored in London and is furnished to the different countries to be used as a standard, and in turn each country prepares its own standard powder which is assayed and its potency determined in terms of the International Powder.

The fundamental importance of a universally accepted reference powder (the International Standard Powder) for determining the strength of unknown digitalis preparations is evident. The various methods of biologic assay employed are in a sense of secondary importance. It is, however, most unfortunate that in the past certain so-called units of potency have been introduced and are still widely used by the pharmaceutic firms based on methods of assay rather than a fixed unit of potency in terms of a standard reference powder. Each method of assay is subject to numerous variations in technic which may alter significantly the final determination. For example, a so-called cat unit may vary considerably, depending on the anesthesia employed, the control of respiration, the rate of injection of the solution and the connection or severance of central nervous system control of the heart. Therefore the simple statement by a manufacturer that 1½ grains (0.1 Gm.) of digitalis is equivalent to 1 cat unit may have little significance for the clinician unless (1) its potency is also stated in terms of the U. S. P. unit or (2) unless he is already familiar with the relative strength of this manufacturer's product. Hence the U. S. P. committee under the chairmanship of the late Dr. Edmunds purposely failed to mention or to recognize a so-called cat unit in any way. The committee rightly insisted on the establishment of an unvarying unit of potency for digitalis equivalent to a specific amount (0.1 Gm.) of a reference powder of known strength (the International Standard Powder). For technical reasons based on the experience of numerous investigators, it recommended for the biologic assay the one hour frog method, which, considered by it preferable to the cat method, is now the official method of standardization in this country.

THE INCREASE IN POTENCY OF THE U. S. P. XI DIGITALIS UNIT

It has been shown by Edmunds [2] and by others [3] that a pill (0.1 Gm.) of whole leaf digitalis equivalent in potency to 1 U. S. P. XI unit is considerably stronger than a pill of the same weight, but of a potency equivalent to Digitalis U. S. P. X. The majority of pharmacologists agree that by biologic assay this increase in potency is approximately 25 to 30 per cent.

Our clinical observations are more or less in accord with the laboratory assays, except that we suspect that in actual practice an increase in potency up to 50 per cent is more nearly correct. For example, in the past, using digitalis equivalent in potency to Digitalis U. S. P. X, we had found a rather convenient plan for digitalizing the average adult patient (when speed was not urgent) to be one pill (1½ grains) three times a day for a week. However, since employing digitalis conforming to Powdered Digitalis U. S. P. XI, we find that 1½ grains (1 U. S. P. XI unit) three times a day often has to be stopped on the fifth or fourth, and not infrequently on the third day because of mild gastrointestinal symptoms or other signs of toxicity. Occasionally even smaller doses have produced a similar response. Furthermore, in maintaining thereafter a therapeutic effect by a daily ration of 1½ grains the drug usually has to be omitted one day or even more often per week to avoid toxic reactions. The varied susceptibility of patients to digitalis presents special difficulty in a clinical assay of the drug and more extensive data are being assembled from various clinics by a special committee. Until this information is available, we believe that in practice digitalis conforming to the U. S. P. XI should be considered one-third to one-half stronger than that corresponding to Digitalis U. S. P. X.

We would suggest that a convenient method, at least for the time being, for digitalization in using Powdered Digitalis U. S. P. XI is to follow the present custom for slow or rapid effect in frequency of dosage but to substitute grain pills or tablets for the commonly employed 1½ grain doses. Sometimes the courses may need to be prolonged a little, but this plan we have found in general safe and effective. Thus for ordinary digitalization 1 grain (0.06 Gm.) of Powdered Digitalis U. S. P. XI three times a day for a week (or for a day or two longer or shorter) will suffice. Digitalization can be maintained by the administration of 1 grain daily (increasing to eight or nine doses or decreasing to five or six doses a week as certain individuals may require).

ACCEPTANCE OF THE NEWER STANDARD

In June 1940 Geiger [4] called attention to a further source of confusion with regard to digitalis. In response to a questionnaire addressed to twelve pharmaceutic firms whose digitalis had been submitted to the Council on Pharmacy and Chemistry of the American

2. Edmunds, C. W.: The Potency of Digitalis Preparations of the 1936 Pharmacopeia, J. A. M. A. **113:** 284 (July 22) 1939.

3. The Potency of Digitalis Standardized According to U. S. P. XI. Correspondence from H N. Wright, George Fahr and Leon Lewis, J. A. M. A. **112:** 1180 (March 25) 1939. Fahr, George: The Treatment of Cardiac Irregularities, ibid. **111:** 2268 (Dec. 17) 1938.

4. Geiger, A. J.: Digitalis U. S. P. XI: Recent Changes in Potency and Designation, Connecticut M. J. **4:** 331 (June) 1940.

Medical Association and found acceptable by them, he tabulated the following information: (1) manufacturer, (2) name of product, (3) method of assay, (4) reference basis, (5) potency designation, (6) potency change since 1936. From these data he found that the majority (ten of the twelve firms) had adjusted the potency of their product to conform to the requirements of the U. S. P. XI. This had resulted in an increase in potency since 1936 for six of the digitalis preparations listed, whereas the potency of the remainder was already equivalent to the U. S. P. XI digitalis. The potency designation, however, continued confusing, since four of these twelve concerns (including two that had changed the potency of their preparation and two that had not) retained a "cat unit" as a potency designation instead of the official U. S. P. XI unit.

In addition to the manufacturers listed by Geiger, there are other well known firms who supply equally satisfactory digitalis. In response to personal inquiry we find that the majority conform to the recommendations of the United States Pharmacopeia and express the potency of their product in U. S. P. XI units. However, there are some who continue to use a "cat unit" as the only potency designation of their product. A few express the strength of their digitalis in terms both of the official U. S. P. XI unit and also of a "cat unit." [5]

As long as not all of the manufacturers conform to the recommendations of the U. S. Pharmacopeia, the physician in prescribing digitalis must keep in mind the 30 to 50 per cent increase in clinical potency since 1936 of approximately half of the widely used preparations.

Finally, we would emphasize the fact that the occurrence of digitalis intoxication is of far more importance than the immediate and temporary unpleasantness accorded the patient. In many instances it precludes, or at least renders more difficult, the later administration of this necessary drug, for the majority of patients who in their own minds are convinced that they are "sensitive" to the drug date their supposed sensitivity to an unpleasant overdosage in the past. It behooves us, therefore, by the use of due caution to avoid increasing the number of these supposedly sensitive individuals, for, in many, digitalis may actually be a life saving measure and also a means of rendering life more comfortable.[6]

SUMMARY AND CONCLUSIONS

1. There is general unawareness in current medical practice of the new standard of potency for digitalis adopted by the United States Pharmacopeia XI (1936).

2. Biologic assay indicates that digitalis of a potency conforming to this new standard is from 25 to 30 per cent stronger than that previously employed. It is our impression that in practice the drug is even stronger than is indicated by laboratory assays and should be considered from one-third to one-half stronger than Digitalis U. S. P. X.

3. A considerable number of well known manufacturers have not adjusted the potency of their digitalis to that of Powdered Digitalis U. S. P. XI, nor do they designate the strength of their product in terms of the official U. S. P. XI unit.

4. It is urgent that the existing confusion be ended by the universal acceptance of the official U. S. P. XI unit of potency, and clinical dosage should be adjusted accordingly. Thus 1 grain of Powdered Digitalis U. S. P. XI should be the average dosage instead of the 1½ grains of Digitalis U. S. P. X commonly prescribed in the past.

5. For example, one well known firm labels its digitalis as follows: Each tablet (grain one and one half) is equivalent to—Digitalis U. S. P. X. (1920 revision) = 1½ grains, or Digitals U. S. P. XI (1936 revision) = 1 grain, or Cat unit = approximately 1.

6. In the twelfth revision of the U. S. Pharmacopeia, to appear shortly, the unit of digitalis potency as designated in the eleventh revision has not been altered. Therefore the foregoing discussion of Powdered Digitalis U. S. P. XI will be applicable to Powdered Digitalis U. S. P. XII of the forthcoming revised Pharmacopeia.

MATERNAL PULMONARY EMBOLISM BY AMNIOTIC FLUID

AS A CAUSE OF OBSTETRIC SHOCK AND UNEXPECTED DEATHS IN OBSTETRICS

PAUL E. STEINER, M.D., PH.D.
AND
C. C. LUSHBAUGH, B.S.
CHICAGO

While most of the deaths occurring during labor and in the early puerperium are said to be due to hemorrhage, toxemia, heart disease or other less common obstetric and medical causes, a few fatalities remain unexplained even after careful postmortem examination.[1] In the absence of pathologic chemical and anatomic changes such deaths are often considered, without proof, to be on a functional basis. It is the object of this paper to attempt to fill this gap in our knowledge and to point out that some of these obscure deaths form a disease entity with its characteristic causation, symptoms and pathologic changes by (*a*) presenting the clinical histories of 8 patients to show that they form a distinct group, (*b*) demonstrating in them a pathologic-anatomic basis for this series of symptoms and (*c*) demonstrating the experimental production of this disease in animals, the disease in them having a similar symptomatology and pathologic anatomy. Efforts will further be made (*d*) to demonstrate that this disease is a relatively common cause of sudden death during labor or soon thereafter and (*e*) to show that this disease entity is composed of several obstetric complications which are widely known but whose etiology has been unknown up to the present time. These include some of the cases of obstetric shock and certain instances of postpartum uterine atony with hemorrhage. Perhaps, also, some conditions which pass incorrectly as nonconvulsive toxemias, some instances of idiopathic hemoptysis of pregnancy and some of the acute pulmonary edemas of pregnancy belong in this group.

Pulmonary embolism by the particulate matter contained in amniotic fluid which gained entrance to the maternal circulation has been demonstrated by us at autopsy in 8 cases in which it seemed to be the cause of death. Experiments have shown that rabbits and dogs can be killed by intravenous injections of human amniotic fluid with symptoms and postmortem changes which resemble those seen in the 8 women.

Pulmonary embolism in the puerperium by large thrombi which originate in the maternal systemic venous system or the right side of the heart or by air are today generally familiar. Also, nonfatal pulmonary embolism by placental fragments is recognized as a common if not constant occurrence by those who have

From the Department of Pathology of the University of Chicago.

Owing to lack of space, this article has been abbreviated for publication in THE JOURNAL. The complete paper appears in the authors' reprints, which will be sent on request.

1. Knauer, E., in Halban, J., and Seitz, L.: Biologie und Pathologie des Weibes, Berlin, Urban & Schwarzenberg, 1927, vol. 8, pt. 1, pp. 993-1054. Williams, J. W.: Obstetrics, ed. 7, New York, D. Appleton-Century Company, Inc., 1936, pp. 1155-1159. De Lee.[8]

an opportunity to examine lungs microscopically in women dead of other causes in the early puerperium. This type of embolism has been described in great detail by Ceelen,[2] writing in Henke-Lubarsch under the title "Plazentarzellenembolien," and by others. We are not primarily concerned with these three well known types of embolism in this paper, which deals with an entirely different phenomenon.

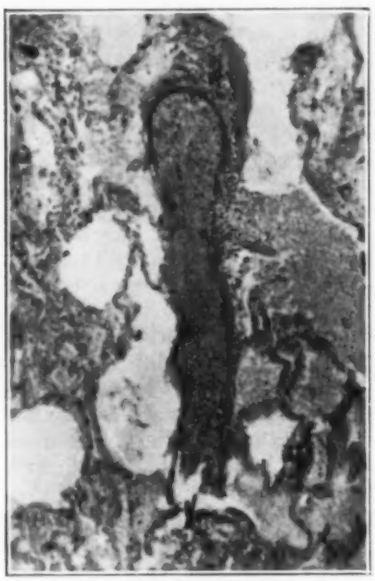


Fig. 1 (case 3).—Dilated small pulmonary artery filled by a mucus (meconium) embolus containing a few leukocytes; × 57. Note the edema.

PRESENTATION OF EIGHT CASES

In the following eight cases a brief summary of the clinical course is given followed by an abstract of the changes found on postmortem examination. In general only the lungs are described under microscopic examination, other important microscopic changes being mentioned in the general postmortem examination. The sections of lung were stained with hematoxylin and eosin, Mallory's connective tissue stain, Feulgen-Bauer stain for mucin[3] and scarlet red on frozen sections.

CASE 1.—*Clinical History.*—F. C., a patient of Dr. H. H. Cox at the Illinois Central Hospital, Chicago, a secundipara aged 30, white, had an uneventful pregnancy. She entered the hospital two weeks before term having occasional mild labor pains. Fetal movements had stopped and fetal heart tones could not be heard for two weeks prior to this time. On admission to the hospital the blood pressure was 106 systolic and 60 diastolic, the temperature 98 F. and the pulse rate 88. The urine was normal. Her labor pains continued to be mild and irregular, stopping at times, for the next forty-seven hours, and the cervix was then dilated 4 to 5 cm. Suddenly at 6:15 a. m. the patient was awakened by an attack of extreme pelvic pain, air hunger and profuse perspiration. She was in shock, with cyanosis of the lips, finger tips and toes. Her pulse rate was 120 and was weak. The violent pains continued. Some blood appeared and the perineum began to bulge. She was given ether to control the pains and at 7:30 a macerated fetus was delivered spontaneously. The placenta was delivered with some difficulty by manual expression ten minutes later and it was followed by some hemorrhage. The uterus was packed at once. The patient remained in shock. She was cold, clammy and pulseless. One thousand cc. of fluid was given by hypodermoclysis, and at 8 o'clock she was given a transfusion of 550 cc. of blood from her husband, whose blood was known to be compatible. She did not rally and died at 9:55, two hours and twenty-five minutes after delivery and three hours and forty-five minutes after she went into sudden shock. The blood loss was estimated as 400 cc.

The final clinical diagnosis was shock of unknown origin.

Postmortem Examination.—The gross postmortem examination (by Dr. Steiner) revealed no important abnormality. The viscera was pale. The birth passages were not remarkable, the uterine pack being dry. The lungs together weighed only 380 Gm. and were pale, dry and fluffy. The heart appeared normal, weighng 220 Gm. There was a small postmortem blood clot in the right atrium. There were no emboli in the heart or main pulmonary arteries. The liver and kidneys grossly showed only pallor, and microscopically they were normal, as was the myocardium. The spleen was slightly hyperplastic. It weighed 160 Gm. There was an old abscess of Bartholin's gland, and one fallopian tube and ovary were missing.

Microscopic Examination.—The lungs appeared relatively normal except for masses of foreign material contained in many pulmonary arteries, from 1 mm. in diameter down to arterioles. These vessels were greatly distended, as indicated by distinct thinning of their walls. The masses which occluded them consisted of a framework of a stringy material with clear interstices and varying numbers of leukocytes which were often arranged in rows between the heavier strands. This material stained blue with hematoxylin and specifically with the Bauer-Feulgen stain for mucin. In addition, there was an admixture of amorphous granular pink staining débris with hematoxylin-eosin in many of the intravascular emboli. This did not react with the fat stain. Capillary embolism was not conspicuous, most of the material being contained in larger vessels. Epithelial squamae were rarely seen.

The final pathologic diagnosis was pulmonary embolism by amniotic fluid containing meconium; recent parturition.

Summary.—With a fetus dead for two weeks the patient went into violent labor and simultaneously into profound shock, from which she died in three hours and forty-five minutes despite subcutaneous fluids, a blood transfusion and stimulants. The gross pathologic examination did not disclose any reason for the unexpected death, but microscopic studies of the lungs revealed a high degree of pulmonary embolism by amniotic fluid which contained meconium.

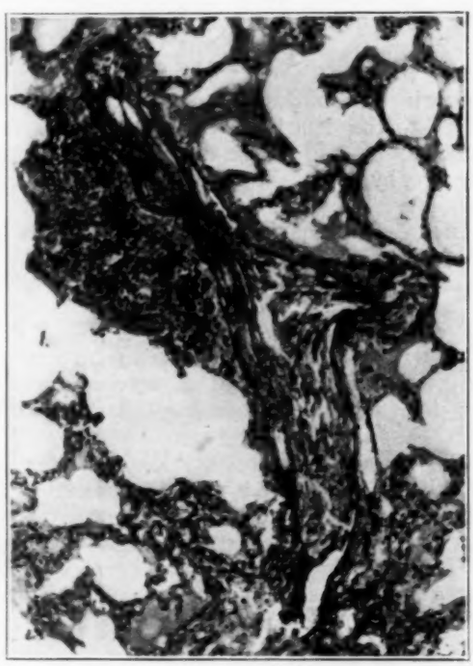


Fig. 2 (case 2).—Embolus consisting of mucin, leukocytes and a few epithelial squamae in a dilated small pulmonary artery; × 120.

CASE 2.—*Clinical History.*—S. F., a primipara aged 26, white, was admitted to the Chicago Lying-in Hospital in the forty-second week of gestation. Her antepartum period was uneventful and the prognosis was considered excellent. The urine was normal, the blood pressure was 128 systolic and 78 diastolic, the pulse rate 136 and the heart and lungs were normal. Despite persistent, powerful labor pains, with a pelvis larger than normal, the head failed to engage and dilatation of the

2. Ceelen, W., in Henke, F., and Lubarsch, O.: Handbuch der speziellen pathologischen Anatomie und Histologie, Berlin, Julius Springer, 1931, vol. 3, pt. 3, pp. 98-103.

3. Bensley, R. R., and Bensley, S. H.: Handbook of Histological and Cytological Technique, Chicago, University of Chicago Press, 1938, p. 105.

cervix was slow. The membranes ruptured after thirteen hours of active labor and the amniotic fluid contained meconium. After thirty-one hours of labor the patient's pulse suddenly increased to 146 a minute. She vomited, began to perspire profusely and became comatose, cold, clammy and cyanotic. Respirations were rapid. The pulse was rapid and thready and the blood pressure was not obtainable. A few rales were heard in the chest. Digitalization was started and 300 cc. of blood was drawn by venesection. She did not respond and died undelivered about one hour after the first sign of collapse was noted. The baby was living up to the time of her death.

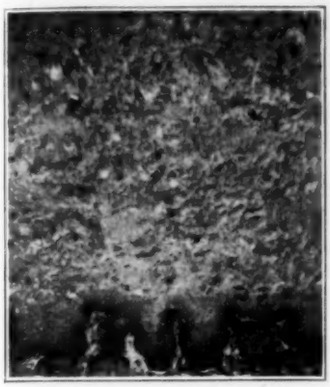


Fig. 3.—Section of colon of newborn infant showing meconium in situ; × 57.

The clinical impression was of acute failure of the left side of the heart of unknown cause, with pulmonary edema.

Postmortem Examination.—At autopsy (by C. C. Lushbaugh) the only striking finding was acute pulmonary edema. A white froth exuded from the mouth. The lungs together weighed 1,700 Gm. and thin, pink, frothy fluid exuded from their cut surfaces. There were no emboli in the heart or main pulmonary arteries. The heart, liver and kidneys showed parenchymatous degeneration. The heart weighed 300 Gm. Both right chambers were distended. The left ventricle was contracted. The spleen was hyperplastic, weighing 250 Gm. There was a slight hydronephrosis on one side.

The baby weighed 3,510 Gm. and appeared normal. The placenta was still attached and appeared normal. The amniotic fluid that remained contained large amounts of meconium. The membranes and placental site were, unfortunately, not examined closely for tears. The uterus and birth passages were otherwise not remarkable.

Microscopic Examination.—The most obvious microscopic feature was edema, which was well defined both in the alveoli and in the interstitial connective tissue. Of greatest interest was extensive embolism of small arteries and to a lesser extent arterioles and capillaries, all of which were dilated. The emboli consisted of a stringy substance which had the staining characteristics of mucin, large amounts of amorphous material which was either granular or smooth and which stained specifically with fat stain. In addition the emboli contained leukocytes and occasional elongated bodies resembling epithelial squamae.

The emboli were almost duplicates of those seen in case 1, but they contained, in addition, large amounts of fatty material which resembled vernix caseosa.

The final pathologic diagnosis was pulmonary embolism by amniotic fluid; acute pulmonary edema; parenchymatous degeneration of the heart, liver and kidneys; acute hyperplasia of the spleen; undelivered fetus at term.

Summary.—While in active labor the patient had a sudden collapse and shock from which she died, undelivered, in one hour, showing acute pulmonary edema. The amniotic fluid had contained meconium, and large amounts of meconium were found in the uterus at autopsy. Besides massive pulmonary edema necropsy disclosed much pulmonary embolism by amniotic fluid with meconium.

CASE 3.—Soon after a hard, short labor the patient went into shock to which she succumbed in eight and one-half hours. She had a relaxed uterus with moderate postmortem hemorrhage. The gross pathologic examination disclosed comparatively normal viscera, except for pulmonary edema, and it did not entirely explain the death. Microscopic examination revealed an extraordinary heavy pulmonary embolism by amniotic fluid, which appeared to be rich in vernix caseosa and meconium.

CASE 4.—After a severe labor the patient went into deep shock, during which she had some uterine hemorrhage. The amniotic fluid had contained meconium. There was no explanation for death other than extensive pulmonary embolism by amniotic fluid, the capillaries showing an unusually widespread involvement. Three uterine veins showed emboli, consisting of meconium-like material, possibly on their way to the lungs. The hemorrhage seemed to follow, not precede, the shock and collapse.

CASE 5.—Following a pregnancy which was complicated by thyrotoxicosis that responded well to medical management, the patient had a sudden delivery following which she soon went into shock and died in fifty-five minutes. The lungs showed edema and embolism by amniotic fluid. Complicating factors were a hyperplastic thyroid and a minimal chronic endocarditis. Both of these were mild and in themselves not sufficient to explain the unexpected termination.

CASE 6.—A woman, two months overdue but otherwise normal, with a dead fetus and meconium in the amniotic fluid, while in severe labor went into deep shock in which the blood pressure first rose, then fell, and the pulse rose, as did the temperature. There was postpartum atony of the uterus with moderate hemorrhage, and death occurred with the patient in shock two hours after delivery. Autopsy disclosed mainly pulmonary congestion, which on microscopic examination was seen to be associated with pulmonary embolism by amniotic fluid containing meconium. There was possibly a complicating factor of recent sepsis.

CASE 7.—A mild, easily controlled diabetic patient died two hours after delivery, in shock. The postmortem examination disclosed widespread embolism of the lungs by amniotic fluid, with acute pulmonary congestion. A complicating feature was that, while clinically there was no evidence of toxemia or of eclampsia, there were pathologic changes commonly associated with eclampsia. Perhaps they should be called "eclampsoid."

CASE 8.—A woman with a fetus known to be dead, after two days of mild, intermittent pains suddenly went into severe labor and quickly passed into shock, in which she died in about two hours. Besides pulmonary embolism by amniotic fluid with acute pulmonary edema, autopsy disclosed a ruptured uterus with the fetus lying in the peritoneal cavity.

SUMMARY OF THE CLINICAL BEHAVIOR

Eight cases have been presented in which there was sudden, unexpected death during labor or soon thereafter. The clinical data are summarized in table 1. Symptoms and signs not recorded there were not necessarily absent, because these were cases of obstetric emergencies and time was not always sufficient to make and record detailed observations.

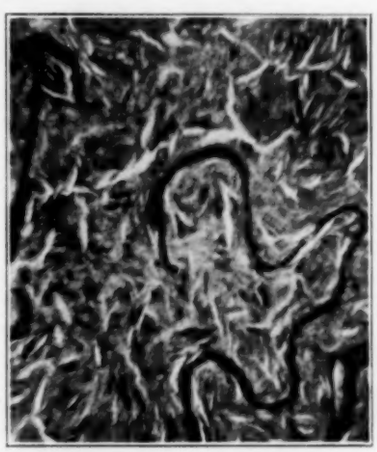


Fig. 4.—Field section of same baby colon as shown in figure 3 under higher magnification (× 120), showing background of meconium mucus with epithelial squamae, some of which are represented by slits and coarse strings of denser mucus.

The pregnancy was of longer duration than is normal in several cases. Pregnancy was uneventful as far as obstetric complications were concerned, but 2 cases presented medical complications. In 1 this was a mild diabetes mellitus which was controlled by dietary management alone, and the other case presented a mild thyrotoxicosis, also controlled by medical management.

The onset of illness was usually by hard or violent labor pains. In several instances the uterus was in tetany. Shortly thereafter the patient passed into shock. The patient had a chill or felt cold. She was restless, dyspneic and cyanotic. Sometimes she vomited and was delirious. In 1 instance the pupils were dilated, and rales were heard when the lungs were auscultated. The blood pressure fell quickly to shock levels. The pulse became first rapid and weak and then was not obtainable.

The duration of labor was not abnormal, varying from four to fifty-one hours. Two of the women died undelivered. Survival after delivery in the other 6 cases was between fifty-five minutes and eight and one-half hours. Survival after the first indication of shock varied from fifty minutes to about eleven and one-half hours.

Additional pertinent data are given in the discussion of predisposing factors (table 8).

The final clinical diagnoses were placenta praevia, obstetric shock of unknown cause, abruptio placentae, ruptured uterus or abruptio placentae, acute failure of the left side of the heart with pulmonary edema and, in 3 cases, postpartum hemorrhage, although in 1 of the latter instances the blood loss was given as only 500 cc.

When the clinical data are correlated with the postmortem observations it is clear that these 8 women all had a severe shocklike picture which was associated with widespread pulmonary embolism. In the section on control studies it will be shown that in other fatal obstetric cases similar changes in the lungs are not found. In 4 of these 8 cases there was no other explanation for death than the pulmonary embolism (cases 1, 2, 5 and 6). In 2 additional cases (cases 3 and 4) hemorrhage might have been a contributing factor in causing death, although it is clear in both of them that the picture of shock preceded the hemorrhage, that the amount of hemorrhage as recorded was not sufficient in itself to cause death and, finally, that the embolism was just as severe as in the preceding group of 4 cases and presumably, therefore, would have caused death even in the absence of hemorrhage. In case 7 the clinical picture was that of shock which resembled that in the uncomplicated group, and although there had been no clinical evidence for toxemia the postmortem examination revealed eclampsia-like changes in the liver and kidney in addition to the pulmonary embolism. This case raises the old question of the specificity of these hepatic and renal changes for eclampsia, and this problem we are unable to solve at the present time.

In case 8, while the clinical picture resembled that of the previous cases, a ruptured uterus was found. This, of course, in itself would explain death. But this leaves unsolved the questions (1) as to how the patient lived for two hours in shock with an enormous rent in the uterus without having had a fatal hemorrhage sooner, (2) as to whether the pulmonary embolism and the ruptured uterus were not produced by the same violent uterine contractions, the former possibly occurring while meconium was still under pressure in the unruptured uterus and hence preceding the rupture, and (3) as to whether the pulmonary embolism might not in itself has been sufficient to cause death. It seems probable that in the last case we are dealing with two major conditions, each independently capable of producing death.

TABLE 1.—*Summary of Signs and Symptoms*

Case	Urine	Blood Pressure		Condition of Uterus	Chill or Coldness	Restless	Dyspneic	Cyanotic	Vomiting	Delirious	Twitching	Pulseless	Dilated Pupils	Rales	Final Clinical Diagnosis
		Before Shock	During Shock												
1	Normal	166/80	?	Violent pains	+	+	+	+	..	..	..	+	..	..	Obstetric shock
2	Normal	128/78	0	Powerful pains	+	+	+	+	+	+	..	+	..	+	Acute failure of left heart
3	Normal	110/64	60/30	Not stated	..	±	..	..	..	..	..	Weak	..	..	Postpartum hemorrhage
4	Trace of albumin	120/70	68/0	Tense; constantly contracted	+	+	+	..	+	+	..	+	..	..	Abruptio placentae with postpartum hemorrhage; latent syphilis
5	Normal	130/75	40/0	Sudden, unexpected expulsion of the baby	+	+	..	+	..	..	..	+	+	..	Placenta praevia; thyrotoxicosis; chronic endocarditis
6	Normal	130/95	170/115, 85/40	Hard and tense, then relaxed	+	..	+	+	+	..	+	..	..	..	Postpartum hemorrhage with shock; sepsis ?
7	Occasional sugar; 2+ albumin once	128/76	?	Hard labor	..	+	..	..	+	..	..	+	..	..	Postpartum hemorrhage; mild diabetes mellitus
8	Trace of albumin	?	?	Severe pains	+	+	+	..	+	..	..	+	..	..	Ruptured uterus or abruptio placentae

TABLE 2.—*Summary of Microscopic Changes of the Lungs*

Case	Emphysema	Edema	Hemorrhage	Pneumonia	Amount of Embolism	Composition of Emboli				Location of Emboli		
						Mucus	Leukocytes	Squamae	Amorphous and Fatty	Arteries	Arterioles	Capillaries
1	0	0	0	0	+++	+++	+	±	0	+++	++	+
2	0	+++	0	0	+++	+++	++	+	+++	+++	++	+
3	0	++	+	0	+++	+++	++	+++	+++	+++	+++	++
4	+	0	0	0	+++	+++	++	++	?	++	+++	+++
5	+	+	0	0	++	++	++	+	0	+	++	++
6	±	++	+	0	++	+	++	++	±	+	++	++
7	0	+	+	0	+++	+	±	+++	++	+	++	+++
8	0	++	0	0	++	+	0	++	+	±	+	++

+ = slight, ++ = moderate, +++ = severe, 0 = none, ? = unknown.

SUMMARY OF THE GROSS PATHOLOGIC CHANGES

Generative Organs.—The uteri in general showed changes which were normal for the pregnant state. In

addition, in those instances in which amniotic fluid was still present it was seen to be mixed with meconium. This we believe to be significant. There were minor lacerations only, with the exception of the case which showed rupture. Of the 6 women who had delivered, 5 had uterine packs, 2 of them having packs despite the fact that the blood loss was given as 400 cc. and 500 cc. Presumably in these patients the clinical picture of profound shock had led to the suspicion of internal hemorrhage and had indicated the packing. Some of the uteri were packed because of hemorrhage, definitely recorded in some instances as due to postpartum atony. More will be said later about the relationship of shock, atony and hemorrhage.

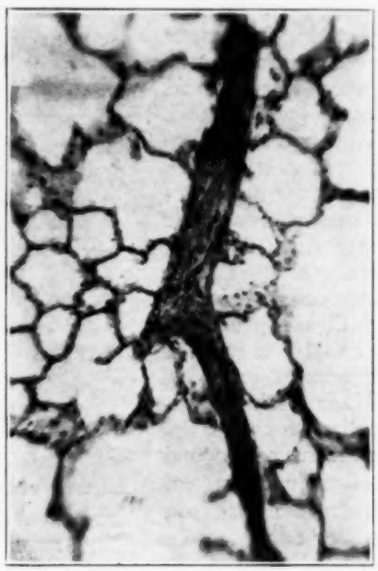


Fig. 5 (dog 8).—Dilated small pulmonary artery filled by an embolus consisting of mucus and leukocytes; × 120. Compare with figure 2.

The birth passages, fallopian tubes, ovaries and mammary glands were normal for the physiologic state.

Most unfortunately we have no observations on the condition of the fetal membranes. This most important point, as we will emphasize in discussing the pathogenesis of the embolism, must remain unclear. We believe, however, that the presence of mucus (meconium) in the uterine veins in case 4 is of great significance (fig. 18).

Lungs: One important positive gross change found at autopsy was pulmonary edema, but this was inconstant. It was fairly severe in 4 instances, in which the lungs weighed more than 1,000 Gm., and it was present to a milder degree in 3 additional cases. It was absent in 1 case in which the lungs together weighed only 380 Gm. The edema was so severe in 1 case as to cause exudation from the mouth. There were no visible emboli in the main pulmonary arteries or elsewhere and no infarcts in the lungs. A special section is devoted to the important microscopic changes of the lungs.

Heart: The heart showed no emboli or thrombi, except in 1 case in which there were tiny vegetations on the mitral valves. The right chambers were overdistended in 2 cases; generally the right ventricle was contracted. Significantly, the left ventricle was in systole in every case except 1, and in this case the degree of postmortem degeneration (case 6) made the observations on heart tone valueless. More will be said about this important observation in the discussion of the pathogenesis. The myocardium sometimes showed nonspecific retrogressive changes varying from cloudy swelling through parenchymatous degeneration to fatty degeneration.

Kidneys: The kidneys showed mild degenerative changes consisting of cloudy swelling or fatty changes. In case 7 there was thickening of basement membranes of capillary tufts in the glomeruli also.

Spleen: The spleens were all hyperplastic, showing slight to great enlargement. They weighed between 160 and 595 Gm. This enlargement we believe to be associated with the pregnancy and not to be related to this form of pulmonary embolism, because a study of the spleens of women who died acute deaths from a variety of causes during or shortly after labor showed them to be enlarged to the same degree.

Other Organs: Changes have been observed in single cases in the pituitary, the thyroid and the hemopoietic system. Their occurrence was too rare for us to attempt to establish any relationship to the disease under discussion.

SUMMARY OF THE MICROSCOPIC CHANGES OF THE LUNGS

The lungs showed edema with a variable admixture of alveolar hemorrhage as previously mentioned. There was evidence in some cases of recent rupture of occasional alveolar walls. There was no pneumonia.

The striking and essential changes were in the blood vessels, where foreign bodies (emboli) composed of three materials were found. They consisted of epithelial squamae or amorphous débris or of mucin either alone or in any and all combinations. Polymorphonuclear leukocytes were present within or on emboli in varying numbers. These emboli were found in pulmonary arteries under 1 mm. in diameter, in arterioles and in capillaries. A comparison of the approximate amounts of the embolic material, its composition and its relative distribution with respect to the size of the blood vessels is given for the individual cases in table 2.

Fig. 6 (rabbit 2).—Dilated small pulmonary artery filled by an embolus consisting of mucus and leukocyes; × 310. Compare with figure 2.

Mucin (Meconium) Emboli.—In general the mucin tended to be lodged in small arteries, although occasionally it passed into the smaller vessels. It was easily recognized as mucin with the hematoxylin and eosin stain alone in most cases, but when it was present in small amounts or when it was heavily infiltrated by

leukocytes, as occurred in the later stages (this was confirmed in the experiments on rabbits and dogs, to be described later), it could be identified with certainty only by the specific stains for mucin. Also, while the mucin usually was basophilic, in some instances it stained slightly with the eosin, but it did stain with the specific mucin stain also. This variability in the staining reaction of true epithelial mucin is not unusual. Mixed with the mucin were variable amounts of poorly stained bodies resembling swollen, degenerating epithelial cells, and in some cases also leukocytes (figs. 1 and 2).

We believe that this mucin is meconium mucin. A section of newborn infant's bowel fixed with its meconium in situ and stained by the same stains is shown in figures 3 and 4. It shows essentially the same structure as do the emboli in the human lungs. Furthermore, when human meconium was injected intravenously into rabbits and dogs, after dilution, the emboli seen in the

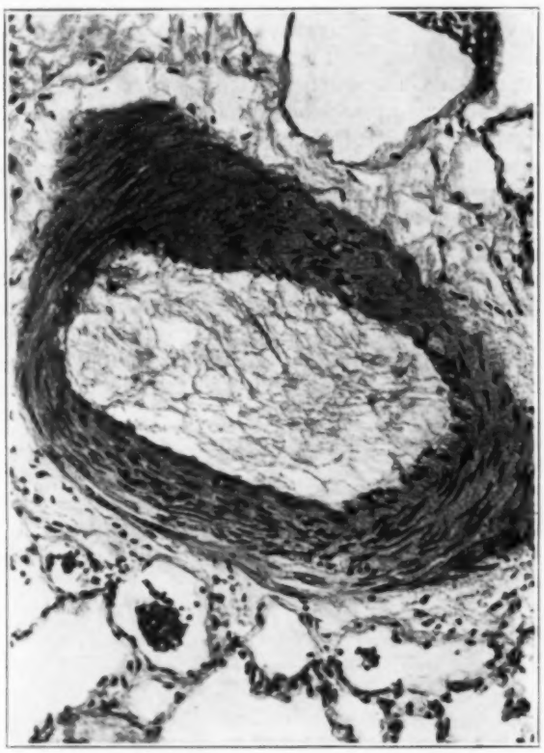


Fig. 7 (rabbit 1).—Pulmonary artery filled by a meconium mucus embolus; × 250. Compare with figure 1.

lungs resembled those seen in the human lung (figs. 5, 6 and 7). Meconium shows degenerating or dead cells mixed with mucus. Whether these represent desquamated epithelial cells of the baby's alimentary tract or whether they are degenerating epithelial squamae swallowed with amniotic fluid is difficult to say.

The mucin emboli often show a layered pattern. Sometimes rows of leukocytes were arranged in linear fashion between such layers. In such cases the emboli showed a remarkable resemblance to the mucin which is commonly seen in distended glands of the uterine cervix. The possibility exists, therefore, that some of the mucin seen in the pulmonary emboli may have its origin in the uterine glands.

Mucin (meconium) emboli appeared at times to be extremely long. Although we did not make serial sections to trace their length, the same embolus appeared to extend through tortuous vessels transected at several places. In some sections taken near the periphery of the lung nearly half of the arteries showed emboli.

Epithelial Squamae as Emboli.—In general epithelial squamae lodged in capillaries or arterioles, although sometimes they were found in arteries. In the smaller vessels they appeared to be impacted; in larger vessels they were often looser and mixed with blood. When they were mixed with much mucus or amorphous débris their site of lodgment was governed by the bulkier material.

Fig. 8 (case 3).—Small pulmonary artery greatly dilated and containing epithelial squamae as emboli; × 100. Compare with figures 4 and 12.

These squamae are illustrated in figures 8 and 9. Their staining reaction was variable, appearing to depend on their degree of hydration and on other factors. In general they were basophilic, sometimes eosinophilic, and sometimes they failed to stain well with either hematoxylin or eosin, and their presence was indicated by clear slits. They were revealed especially well by the Mallory connective tissue stain, with which they varied from yellow through orange to red or purple, and sometimes on to dark blue-black.

Similar epithelial squamae, derived from the baby's epidermis, are seen in amniotic fluid and in vernix caseosa. When these materials of human origin were

Fig. 9 (case 7).—Two capillaries in an alveolar wall containing epithelial squamae as emboli; × 250.

injected into the veins of rabbits and dogs they were found as emboli in the pulmonary vessels (figs. 10 and 11), where in all respects they resembled those seen in the human lungs. These squamae are familiar to all those who study the lungs of newborn infants, in whom they are aspirated and found in the pulmonary

alveoli (fig. 12). These squamae are familiar also to dermatologists who make scrapings from skin for purposes of microscopic examination. There can be no serious question as to the nature or origin of the pulmonary emboli of this sort.

Emboli of Amorphous Materials.—Found alone or in combination with mucin or squamae and located usually in arterioles and capillaries and occasionally in arteries were masses of eosinophilic, granular, débris-like material, sometimes containing vacuoles. In frozen sections stained with scarlet red this material showed a varying degree of affinity for the dye. Some of it stained not at all, some stained faintly and some stained heavily, being nearly like neutral fat (fig. 13). Because of its appearance, staining reactions and frequent intimate mixture with epithelial squamae, we believe this to be the caseous ground substance of vernix caseosa. Furthermore, similar material was found as emboli in the lungs of rabbits which had been inoculated with human vernix caseosa (fig. 14).

From the experimental studies on rabbits and on dogs it appears that there is a leukocytic reaction to these emboli within a few hours. An intense leukocytic infiltration obscures the embolus, particularly if it is composed principally of mucus (fig. 15). We believe that at least some of the dense leukocytic foci in the human blood vessels represent a reaction to emboli, even when the material of the latter cannot be demonstrated.

Fig. 10 (rabbit 4).—Extremely dilated pulmonary arteriole containing epithelial squamae as emboli; × 225. Compare with figures 4, 8 and 12.

The blood vessels themselves showed no essential change except dilatation. This was sometimes extreme, the musculature showing a remarkable thinning.

When the postmortem examination is made before the blood in the pulmonary vessels has clotted, escaping blood appears to carry with it some of the smaller, nonimpacted emboli. For this reason, among others, a quantitative estimation of the amount of embolism is crude.

Quantitatively, however, the amount of embolism certainly exceeds that which we have seen in some cases of fatal pulmonary fat embolism.

Many of these lungs as well as those to be mentioned in our control studies contain the giant cells which are so common in the puerperium. They showed no relation to the embolism described here in occurrence or in quantity (fig. 16).

CONTROL STUDIES—HUMAN

Direct experiments on human beings to establish a causal relationship between the pulmonary embolism which we have described and the clinical picture of shock and death are of course impossible. In an effort to get additional indirect information on this point from human sources to supplement the direct evidence obtained from the experiments with animals, and in order to gain more experience from which to judge the importance of the embolism in those of our cases in which there were complicating factors (cases 4, 7 and 8), we have restudied all the control material that was available.

Fig. 11 (dog 2).—Dilated pulmonary arteriole containing a mass of epithelial squamae as an embolus; × 240. Compare with figure 9.

This material consisted of 34 women who died after the seventh month of pregnancy, during labor or in the first seven days of the puerperium. Nineteen of these women died during labor (5 cases) or in the first nine hours thereafter (14 cases). Thus they fall in the same period of time as did the 8 with the pulmonary embolism. Details are given in table 3. These 34 cases are all represented in table 7 also, but the number is smaller than that shown in the latter table because adequate microscopic sections were not available for study in every case and because the cases in table 7 include those from the entire puerperium.

The lungs of these 34 patients were examined carefully for evidence of this form of embolism. In only 1 did we find any trace of suspicious-appearing materials in the blood vessels. This consisted of a single capillary filled by material which took the stain for mucus.

It appears, then, that embolism of the type which we have described is associated with the clinical picture also presented, and that it is absent in the cases in which death occurred in the same period of time and in which the usual, previously known causes of death in obstetrics were present.

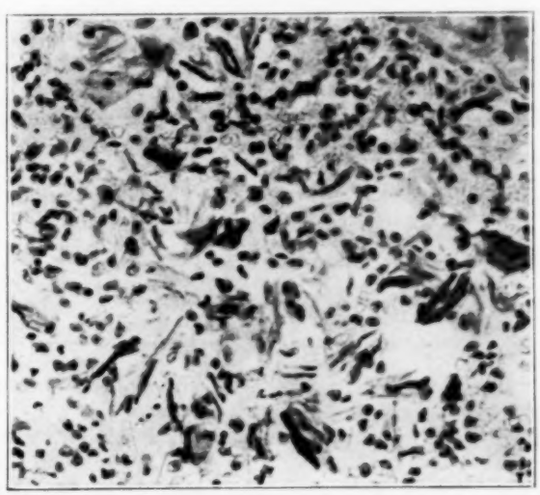


Fig. 12.—Lung of newborn baby showing atelectasis and infection in a region which shows also many epithelial squamae; × 350. They are commonly aspirated in amniotic fluid.

EXPERIMENTAL STUDIES

Because it is impossible to prove a cause and effect relationship between the pulmonary embolism and the clinical behavior either by experimental methods or by simple observation in the human being, we have performed experiments on rabbits and on dogs. This work was undertaken to determine (*a*) whether amniotic fluid and also meconium could produce death when introduced into the vascular system, (*b*) whether the clinical picture in such animals would be similar to that seen in the women, (*c*) whether the changes in animals' lungs would resemble those seen in human lungs and finally (*d*) whether the known material injected into the animals would have the same histologic staining reactions and general structure as the unknown material discovered in the human lungs.

Fig. 13 (case 2).—Capillary in an alveolar wall filled by an embolus which stains strongly with scarlet red; × 240.

Experiments with Meconium.—Meconium was obtained from the sigmoid flexure of the colon of a baby recently dead. It was diluted with physiologic solution of sodium chloride to about four times its original volume and was then used for injection.

Rabbit 1: Three cc. of the meconium suspension was injected into the marginal ear vein of a healthy adult female rabbit. It was injected slowly over a period of ten minutes, at which time the animal became first restless, then dyspneic with gasping for air and then quickly exhibited convulsions. It died one minute later in opisthotonos.

Autopsy revealed no gross changes in the lungs, but there were petechial hemorrhages in the thymus and pericardium of the type commonly associated with asphyxial death in anaphylactoid shock and in other conditions.

TABLE 3.—*Control Cases*

Time of Death	Number of Cases
Not in labor (cesarean section)	3
During labor	5
0 to 9 hours after labor	14
10 to 24 hours	7
25 to 48 hours	2
2 to 7 days	3
Total	34

Microscopic examination of the lungs, however, disclosed a remarkable picture:

Except for a small amount of edema of the perivascular connective tissue, the changes were confined to the arteries, arterioles and a few capillaries which contained emboli and showed dilatation. In the arteries and some arterioles the emboli consisted almost exclusively of stringy material which had the staining characteristics of mucin (fig. 7). There was, in addition, an admixture of a small amount of epithelial squamae, leukocytes and amorphous material. Some arterioles and capillaries contained the latter materials but no mucin.

The injection of a meconium suspension was interrupted in this rabbit by its sudden death in anaphylactoid shock. Microscopically the lungs showed a picture which was almost a duplicate of the lungs in cases 1 and 4, differing from them only in that there were fewer leukocytes in the mucin.

Rabbit 2: One cc. of the same meconium suspension which was used in rabbit 1 was injected intravenously during a period of one minute, followed in ten minutes by another similar injection. Twenty-three minutes after the second injection symptoms of anaphylactoid shock developed which in all respects resembled those of rabbit 1, and it also died quickly.

Autopsy disclosed slight pulmonary edema and petechial hemorrhages in the thymus and pericardium.

Microscopic examination of the lungs showed some recent rupture of alveolar walls and slight edema. The main abnormality was an extensive embolism of blood vessels. Some pulmonary arteries and many arterioles were occluded by emboli which stained like mucin. Some arterioles and many capillaries were occluded by emboli which showed only a small amount of mucus, much amorphous material and great numbers of leukocytes. There were only a few epithelial squamae in the mucus (fig. 6).

Death occurred in anaphylactoid shock thirty-five minutes after the first of two injections of a human meconium suspension. At autopsy pulmonary edema was already present. Microscopically this case has its human counterpart in the smaller blood vessels in case 4.

Rabbit 3: One cc. of the same human meconium suspension used in rabbits 1 and 2 was injected slowly into the ear vein and the animal was killed six hours afterward. Uneasiness and refusal to eat were the only signs of distress up to that time.

Autopsy disclosed extensive pulmonary edema. Microscopic examination of the lungs confirmed the presence of much alveolar edema fluid and revealed also a little alveolar hemorrhage. The blood vessels showed only a slight amount of embolism. This consisted mostly of capillary emboli composed of amorphous débris, leukocytes, occasional epithelial squamae and a little mucus. In addition, an occasional pulmonary artery exhibited an embolus of mucus and leukocytes.

The amount of embolism in this case was insufficient to throw the animal into anaphylactoid shock but sufficient to cause the production of pulmonary edema in six hours.

Experiments with Amniotic Fluid.—Undiluted human amniotic fluid rich in vernix caseosa was injected into rabbits.

Rabbit 4: Five cc. of amniotic fluid was injected into the marginal ear vein in a period of ten minutes, followed in one hour by 20 cc. of the same specimen. This was injected at the rate of 1 cc. a minute. The animal was killed at the end of seventy-two hours.

Fig. 14.—Pulmonary arteriole of a rabbit which had been injected with human amniotic fluid, showing an embolus which stained with scarlet red; × 240. Compare with figure 13.

Autopsy disclosed thrombosis by blood and vernix caseosa of the internal jugular vein on the side of injection. This was thought to account for the lack of illness in the animal, the injected dose having been large but having apparently not reached the lung. Microscopically the lungs were comparatively normal. They showed a

slight alveolar edema and an occasional embolus in blood vessels. A few capillaries and an occasional arteriole and artery showed emboli which consisted mostly of amorphous material mixed with many epithelial squamae and leukocytes (fig. 10).

This is an example of minimal embolism which proved to be sublethal. None of it was mucinous in nature, corresponding with the fact that no meconium was present in the amniotic fluid used for injection. A slight pulmonary edema was produced despite the absence of clinical illness.

Fig. 15 (dog 3).—Pulmonary lesion consisting of mucin heavily infiltrated by leukocytes. The wall of the blood vessel is not recognizable in this particular lesion. Seven days after injection with human meconium and amniotic fluid; × 240.

Rabbit 5: Five cc. of the same specimen of amniotic fluid used in rabbit 4 was injected intravenously during a period of five minutes. Eight hours later the animal was found recently dead.

Autopsy disclosed severe edema of the lungs and petechial hemorrhages in the thymus and pericardium. The gross changes resembled those found in rabbit 2, being compatible with anaphylactoid shock. Microscopic examination of the lungs disclosed much edema and in addition many capillaries and arterioles which were filled by emboli, which consisted of amorphous material, leukocytes and a few epithelial squamae. There was no recognizable mucus.

Injection of human amniotic fluid which was rich in vernix caseosa in a dose which was lethal in about eight hours led to pulmonary edema. The embolism involved the smaller vessels. It showed great resemblance to that in cases 6, 7 and 8 in the distribution, amount and the nature of the emboli.

Experiments with Filtered Amniotic Fluid.—Rabbits 6, 7, 8 and 9.

Fresh, human amniotic fluid which was first passed through filter paper was injected into these 4 rabbits. Each received 30 cc. in the ear vein in a period of thirty minutes. Pathologic effects were not seen. These experiments were made to control the factor of injection of a heterologous protein into the rabbits. The dose given was chosen because it was a larger volume than that used in rabbit 4. Still larger doses were not considered advisable because they would introduce additional unwanted factors such as sudden increase in blood volume and the like.

Experiments with Mixtures of Meconium and Amniotic Fluid.—Dogs: A mixture was prepared by adding fresh human meconium taken from the intestines of dead newborn infants to fresh human amniotic fluid. The proportions were 1 Gm. of meconium to 4 cc. of amniotic fluid. This mixture was then used for intravenous injection into 9 dogs. Two additional dogs were inoculated with a mixture in which the proportions were 1 Gm. of meconium to 9 cc. of amniotic fluid (dogs 1 and 11).

In all, 11 dogs were inoculated intravenously with the meconium-amniotic fluid mixtures. The doses and the results are given in table 5. With one exception (and in this instance the dose was small) the dogs showed shock reactions. These began in about thirty seconds and consisted of restlessness, dyspnea, nausea and vomiting, rapid pulse, cyanosis and sometimes diarrhea. When the dose was heavy and the reaction was severe, the pulse at times showed considerable irregularity. There were often violent peristalses in the abdomen.

To five dogs atropine sulfate in a dose of 0.2 mg. per kilogram of body weight was given intravenously ten or fifteen minutes before the shocking dose of meconium-amniotic fluid mixture was injected. The atropine was given in order to see whether the severity of the reaction could be decreased by abolishing depressor reflexes from the embolized lung to the heart.

The injections of atropine did not prevent or abolish the shock, although they did seem to lessen the severity of the reaction when sublethal amounts of meconium-amniotic fluid were given.

As shown in table 5, the amount of meconium-amniotic fluid mixture administered to the dogs was varied so as to produce reactions of different degrees of severity. The dogs that survived the immediate shock reaction were killed at the times indicated.

The gross postmortem examinations of the dogs that died in shock almost immediately were negative except for pulmonary edema. Those surviving for a few hours showed more edema fluid, which was sometimes bloody. The dog surviving for thirty-six hours showed, in addition, focal pneumonia. At one and two weeks the dogs were grossly normal, except for focal pleural adhesions.

The results of the microscopic studies of the lungs are given in table 6. Since they correspond with the observations made on human beings (table 2) and rabbits (table 4), the protocols are not given individually in detail. The survival of dogs for one and two weeks afforded an opportunity to study the fate of emboli, and this will be mentioned later.

Summary of the Experimental Studies.—These experiments showed that human amniotic fluid and human meconium could produce death when injected into the vascular system of rabbits and dogs. These animals showed the clinical picture of anaphylactoid reactions when the embolism was heavy. When death did not occur too suddenly pulmonary edema developed.

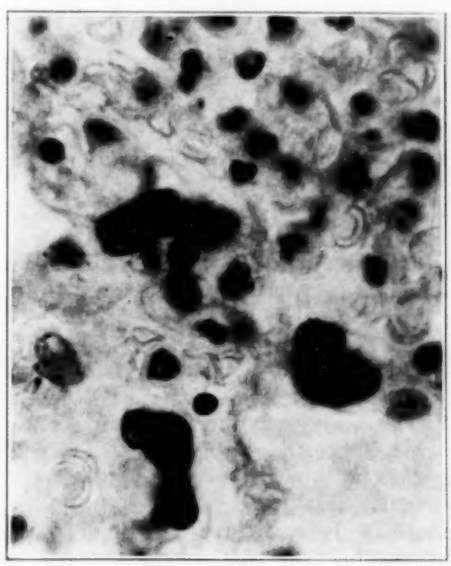


Fig. 16.—Human lung in the puerperium showing giant cells in capillaries of the alveolar walls. This is a common phenomenon with which this paper is not primarily concerned; × 1,100.

The changes in the lungs grossly and microscopically paralleled those seen in the human lungs. By the use of the same stains which were used on the human lungs, namely hematoxylin and eosin, Mallory's connective tissue stain, the Feulgen-Bauer stain and scarlet red stain, the emboli seen in the animals' lungs were shown by microscopic examination to have the same staining characteristics and appearance as the human emboli. In tables 4 and 6 an attempt has been made to compare quantitatively, qualitatively and with respect to location the embolism in the animals with that found in the human beings and charted in table 2.

In the animals the amount of leukocytic infiltration into the emboli paralleled the length of survival. This had been suspected in the human cases, in which, however, the moment of embolism was less accurately known.

was found for passing of emboli through the lung into the general systemic circulation. Emboli of epithelial squamae were found, however, in afferent arterioles to renal glomerular tufts in case 2 (fig. 19). Presumably the size and consistency of the emboli were such as to prevent their ready passage through the filter bed of the lung. This is unlike air and oil or fat embolism, in both of which some passage through the lung eventually occurs.

The later fate of the emboli observed in the dogs' lungs was that of partial or total removal, channelization occurring if the removal was incomplete. Granulomatous lesions, illustrated in figure 15, were found at seven days but were small and inconspicuous at fourteen days.

Peculiar, unfamiliar lesions were found in the lungs of 1 woman, whose case is not included in this paper,

TABLE 4.—*Rabbits: Summary of the Microscopic Changes in the Lungs*

						Composition of Emboli				Location of Emboli		
Rabbit	Emphysema	Edema	Hemorrhage	Pneumonia	Amount of Embolism	Mucus	Leukocytes	Squamae	Amorphous and Fatty	Arteries	Arterioles	Capillaries
1	0	±	0	0	+++	+++	±	±	0	+++	+++	+±
2	+	+	0	0	+++±	+++	+++	±	0	+++	+++	+++
3	0	+++	++	0	+	±	+	±	0	±	±	+
4	0	+	0	0	+	0	+	+±	0	±	±	±
5	0	++	0	0	++	0	+	+	++	0	+	++

0 = none, + = slight, ++ = moderate, +++ = severe.

TABLE 5.—*Dogs: Summary of the Microscopic Changes in the Lungs*

						Composition of Emboli				Location of Emboli		
Dog	Emphysema	Edema	Hemorrhage	Pneumonia	Amount of Embolism	Mucus	Leukocytes	Squamae	Amorphous and Fatty	Arteries	Arterioles	Capillaries
1	0	++	±	0	+	+	+	0	0	+	+	+
11	0	±	0	0	+	+	++	±	0	+	+	+
3	0	0	0	0	++	++	+++	±	0	++	++	+
10	0	0	0	0	+	±	++	0	0	+	+	+
12	0	++	0	0	++±	+++	++	±	0	++	++	+
2	0	++	+	+	+++	+++	++	+	+	+++	++	++
7	0	+	0	0	++	++	+	±	±	++	+	+
8	+	++	0	0	+++	+++	+	+	+	++	+++	+++
9	±	++	±	0	+++	+++	+	+	±	+	+++	+++
4	+	+	0	0	++	++	+	+	±	+	++	+++±
6	+	+	0	0	++	++	+	+±	±	+	++	+++

0 = none, + = slight, ++ = moderate, +++ = severe.

In general the site of lodgment of injected material in the animals confirmed the observations previously made in the human lungs. The thick mucus of meconium tended to lodge in arteries and arterioles, while the more finely divided vernix caseosa of amniotic fluid passed into the small vessels. This is additional evidence that the mucinous material seen in the human lungs was meconium.

In this connection the experiments of Warden [4] are of interest. He found that intravenous injections of rabbit amniotic fluid into rabbits caused death in convulsions. The gross postmortem changes resembled those described here. He did not report the important microscopic changes in the lungs, having been interested in the problem of eclampsia.

That death of the experimental animals was not due merely to the injection of a heterologous protein is shown by rabbits 6, 7, 8 and 9.

FATE OF THE EMBOLI

The immediate fate of the emboli appeared to be that of lodging in the pulmonary vascular bed, where they quickly became infiltrated by leukocytes. Little evidence

4. Warden, M. R.: Amniotic Fluid as a Possible Factor in the Etiology of Eclampsia, Am. J. Obst. & Gynec. **14**: 292-299 (Sept.) 1927.

who died in the puerperium. They consisted of granulomatous nodules containing foreign body types of giant cells. They were located in the lung parenchyma near

TABLE 6.—*Intravenous Injections of Meconium-Amniotic Fluid Mixture in Dogs*

Dog	Dose in Cc. per Kg.	Atropine	Immediate Reaction	Length of Survival
1	0.67	None	Severe	12 hours ±
11	0.67	Yes	None	7 days (C)
3	2	None	Moderate	7 days (C)
10	2	None	Moderate	14 days (C)
12	2	Yes	Slight	16 hours ±
2	3	None	Moderate	36 hours ±
7	3	None	Severe	4 hours
8	3	Yes	Severe	8 hours
9	4	None	Severe	5 minutes
4	4	Yes	Severe	5 minutes
6	4	Yes	Severe	3 minutes

(C) = chloroformed.

pulmonary blood vessels, and they were microscopic. These human lesions do not resemble very closely the late lesions seen in the dogs, and so we are not convinced that we have seen the healing stages in the human lung.

(to be continued)

THE PRESENT STATUS OF THE IMMEDIATE TELLURITE TEST FOR DIPHTHERIA

HOWARD R. BIERMAN, M.D.
AND
RICHARD W. MAXWELL, M.D.
ST. LOUIS

Since a specific antitoxin for the treatment of diphtheria has become available and since its efficacy depends in large part on the promptness of its administration, it is imperative to diagnose the disease as quickly as possible. Although Löffler's medium was successfully devised for rapid culture of Corynebacterium diphtheriae, incubation for from eight to twelve hours is required before a diagnosis can be made. The addition of calcium tellurite to the culture medium by Conradi and Troch in 1912 [1] was a step toward a more rapid laboratory aid to diagnosis. Since their original work, many mediums containing different salts of tellurium have been devised.[2] The value of tellurite medium lies in the blackening of colonies of Corynebacterium early in growth, thus facilitating their isolation and detection.

In 1938 Manzullo of Buenos Aires [3] discovered that pieces of diphtheritic membrane which had adhered to the swab turned black when incubated in blood tellurite medium. His preliminary tests revealed that fibrin itself possessed no power to reduce the potassium tellurite but that fibrin immersed in a culture of C. diphtheriae rapidly acquired this property. When potassium tellurite was applied to pharyngeal membranes or exudates in situ, diphtheritic membranes underwent an obvious blackening. His technic was as follows:

> A 2 per cent solution of potassium tellurite is prepared, the salt being dissolved in distilled water at a temperature of 40 C. This solution should not be kept for more than thirty days after preparation. A swab dipped into the solution is made to touch the membrane or exudate in the patient's throat, which should not have been recently treated with hydrogen peroxide, tannic acid or methylene blue. The tongue should not be touched, since its surface is the only part of the buccal mucous membrane which under normal conditions possesses the power of blackening potassium tellurite.

Manzullo stated that if the infection is caused by C. diphtheriae, the area that has been in contact with the swab will show obvious blackening within five to ten minutes. If not, there will be no change in color. He applied this test in 75 cases with encouraging results (table 1).

Only six reports of similar studies have appeared since 1938. Three of these [4] were not enthusiastic concerning the value of Manzullo's tellurite test. Two reports were not available to us.[5] The sixth was by Fox, Rhoads and Lack,[6] who in the light of their results in 27 cases suggested that in the presence of a negative tellurite reaction therapeutic antitoxin may reasonably and safely be withheld until the cultures can be reported.

PRESENT INVESTIGATION

On admission, 117 patients who entered the City Isolation Hospital during the years 1938, 1939 and 1940 with exudates or diphtheritic membranes of the pharynx were subjected to Manzullo's immediate tellurite test. The tellurite solution was freshly prepared every two weeks and the swab was soaked thoroughly in the solution and kept in immediate contact with a cleansed area of the membrane for at least five to ten seconds. At least three negative cultures were obtained before a pharynx was considered diphtheria negative; frequently many more cultures were taken. When the clinical picture was that of diphtheria but the reaction to the tellurite test was negative, the procedure was repeated with the usual precautions. The clinical impression of the case determined the administration of antitoxin and the result of the tellurite test was disregarded entirely. The results are recorded in table 2.

TABLE 1.—*Results of the Tellurite Test in Four Hundred and Thirty Cases*

Author	Cases	Positive Diphtheria Cultures		Negative Diphtheria Cultures	
		Reduction	No Reduction	Reduction	No Reduction
Manzullo (1938) [3]	75	37	3	0	35
Tomlin (1939) [4]	44	28	0	10	6
Tombleson and Campbell (1939) [4]	200	108	22	43	27
Cooper, Peters, Wiseman and Davies (1939) [6]	84	44	13	17	10
Fox, Rhoads and Lack (1939) [6]	27	17	0	1	9
Total	430	234	38	71	87

TABLE 2.—*Results of the Tellurite Test in Authors' Series*

Cases	Positive Diphtheria Cultures		Negative Diphtheria Cultures	
	Reduction	No Reduction	Reduction	No Reduction
117	46	4	29	38
Per cent	39.3	3.5	24.8	32.4

Of the 117 patients tested, 29 (24.8 per cent) were shown not to have diphtheria but gave positive reactions to the tellurite test (false positive reactions). In 84 cases (71.7 per cent) the tellurite test was accurate: there was a negative reaction in 38 instances with negative cultures and a positive reaction in 46 with positive cultures for C. diphtheriae.

In 4 cases false negative results were obtained with the test, i. e. no blackening of the membrane with a report of a positive culture for C. diphtheriae. In 1 of these instances, however, the virulence test gave negative results. The second false negative reaction was obtained on a membrane which had the gross appearance of a diphtheritic membrane; a repeat application of the tellurite solution twelve hours after admission gave a positive reaction. The 2 remaining patients had membranes which failed to reduce the

From the City Isolation Hospital and the Department of Medicine, Washington University School of Medicine.

1. Conradi, H., and Troch, P.: Ein Verfahren zum Nachweis der Diphtheriebacillen, München. med. Wchnschr. **59:** 1652, 1912.
2. Anderson, J. S.; Happold, F. C.; McLeod, J. W., and Thomson, J. G.: On the Existence of Two Forms of Diphtheria Bacillus—B. Diphtheriae Gravis and B. Diphtheriae Mitis—and a New Medium for Their Differentiation and for the Bacteriological Diagnosis of Diphtheria, J. Path. & Bact. **34:** 667 (Sept.) 1931.
3. Manzullo, Alfred, cited in Diphtheria Diagnosis While You Wait, editorial, Lancet **2:** 1181 (Nov. 19) 1938.
4. Tomlin, Eric: Potassium Tellurite in the Diagnosis of Diphtheria, Brit. M. J. **1:** 1273 (June 24) 1939. Tombleson, J. B. L., and Campbell, R. M.: The Immediate Tellurite Test in Diphtheria, ibid., 1275. Cooper, K. E.; Peters, B. A.; Wiseman, J., and Davies, J. M.: Reduction of Potassium Tellurite in Diphtheria and Other Throat Conditions, Lancet **2:** 248 (July 29) 1939.
5. Sordelli, A.; Rugiero, H.; Manzullo, A., and Herran, J.: Diphtheria: Diagnosis and Diagnostic Errors, Prensa méd. argent. **27:** 1324 (June 26) 1940. Schiavone, E. L.: Manzullo Test of Pseudomembranes (Potassium Tellurite Test), Semana méd. **2:** 882 (Oct. 17) 1940.
6. Fox, W. W.; Rhoads, P. S., and Lack, Herbert: Experience with a Rapid Clinical Test for Diphtheria (Manzullo), J. A. M. A. **113:** 675 (Aug. 19) 1939.

tellurite, yet bacteriologic studies showed the presence of a virulent strain of C. diphtheriae. No ill effects from the procedure were recognized.

COMMENT

The chemical effect of potassium tellurite solutions on diphtheritic membranes probably depends on the reduction of the tellurium salt to the black amorphous tellurium.[7] Tellurium salts are poisonous [8] only in large doses given parenterally, but in the organism they are changed to the metallic state, which is harmless.[9] The reducing activity of colonies of Corynebacterium is shared also by Corynebacterium hofmanni, Corynebacterium xerosis and other organisms of the diphtheroid group. Several other bacteria (streptococci, staphylococci, Proteus vulgaris, Hemophilus influenzae, Sarcina, some gram-positive spore-bearing bacilli and certain proteolytic aerobes) also are known to exhibit this reducing ability.[10] A few of the lower fungi, notably Penicillium notatum Westling and Penicillium chrysogenum Thom, also may reduce tellurite salts with the formation of dimethyl tellurides.[11] In view of the fact that early cultures of bacteria are nearly always strongly reducing systems, it is not surprising that the reduction of tellurite by bacteria-loaded membranes is a nonspecific reaction.[12]

The offensive, garlic-like odor exhaled by persons after the application of the tellurite is most likely due to the volatile tellurite formed by methylation of the tellurite solution.[13] Although the odor is somewhat disagreeable to observers, patients do not object to it.

Faulty application of the tellurite solution to the membranes of the throat may explain some of the reported false negative results. In the throats of patients with diphtheria there is frequently found abundant, thick, tenacious mucus which may cover the membrane so effectively as to prevent the tellurite from making actual contact with the membrane. With the difficulty of adequately visualizing the pharynx of an acutely ill patient, this mucus makes the application of the solution a difficult procedure even in the hands of an experienced physician. Prior to the application, the area of the membrane should be swabbed thoroughly for a culture. The area to be tested should be cleansed and dried. The mouth should be kept open, the tongue depressed and the swab held in contact with the prepared area for at least five to ten seconds. Removal of the mucus and saliva by suction is helpful. Cultures must always be taken before the tellurite is applied because of its germicidal properties.[14]

In this group only 2 false negatives were encountered. Other writers have encountered more. Manzullo reported 3 in his series of 75 cases, Tombleson and Campbell 22 in 200 and Cooper and his associates 13 out of 84 cases studied. It appears, therefore, that failure to make a positive diagnosis is not infrequent and that at least some patients with clinical diphtheria will be denied immediate treatment with antitoxin if absolute reliance is placed on the tellurite test. It would seem safer, therefore, to adhere to the policy established by the staff of the City Isolation Hospital of giving antitoxin whenever a patient has a confluent membrane of the throat, even though the tellurite test is negative and without waiting for the results of the culture.

SUMMARY

1. The potassium tellurite procedure for the differential diagnosis of diphtheria, as suggested by Manzullo, was applied to 117 patients exhibiting membranes of the throat.

2. The test was frequently positive on nondiphtheritic membranes but was falsely negative only twice.

3. A negative tellurite reaction, if it contradicts the clinical impression, is not sufficiently reliable to justify one in withholding antitoxin therapy.

4. It is felt that the technical difficulties of applying the test at present and the frequency with which both false positive and false negative reactions are obtained make it unsatisfactory as a routine guide for the therapy of diphtheria. Refinements in technic might admittedly enhance its usefulness.

5600 Arsenal Street.

7. Mellor, J. W.: A Comprehensive Treatise on Inorganic and Theoretical Chemistry, New York, Longmans, Green & Co. **2**: 30, 1931.

8. Hansen, K.: Versuche über die Wirkung des Tellurs auf den Lebenden Organismus, Ann. d. Chem. **86**: 208 (pt. 2) 1853.

9. Czapek, F., and Weil, J.: Ueber die Wirkung des Selens und Tellurs auf den Thierischen Organismus, Arch. f. exper. Pathol. **32**: 438, 1893.

10. Allison, V. D., and Ayling, T. H.: An Improved Medium for the Isolation of Corynebacterium Diphtheriae: Trypsinized Serum Tellurite Copper Sulfate Agar, J. Path. & Bact. **32**: 299 (April) 1929.

11. Bird, Marjorie L., and Challenger, Frederick: The Formation of Organometalloidal and Similar Compounds by Micro-Organisms; part 7. Dimethyl Telluride, J. Chem. Soc., London, 1939, p. 163, pt. 1.

12. Hewitt, L. F.: Oxidation-Reduction Potentials in Bacteriology and Biochemistry, London, P. S. King & Son, Ltd., 1935, p. 47.

13. Mead, L. D., and Gies, W. J.: Physiological and Toxicological Effects of Tellurium Compounds with Special Study of Their Influence on Nutrition, Am. J. Physiol. **3**: 20, 1900.

14. Joachimoglu, G., and Hirose, W.: Zur Pharmakologie des Selens und Tellurs: II. Mitteilung. Die Wirkung ihrer Sauren auf Diphtheriebacillen, Biochem. Ztschr. **125**: 1, 1921.

Clinical Notes, Suggestions and New Instruments

BROMIDE INTOXICATION OF UNUSUAL SEVERITY AND CHRONICITY RESULTING FROM SELF MEDICATION WITH BROMO-SELTZER

PAUL C. BUCY, M.D., CHICAGO; THOMAS A. WEAVER, M.D., CINCINNATI, AND EDWARD H. CAMP, M.D., CHICAGO

Numerous reports [1] have called attention to the fact that severe psychosis, with mental deterioration, loss of memory, delirium and hallucinosis, is not uncommon as a result of intoxication with bromides. Moore, Sohler and Alexander,[2] in a review of the recent literature have pointed out that "the duration of bromide intoxication from the appearance of the first symptoms to the disappearance of the major toxic signs" is usually a matter of only two to eight weeks. In the present instance a progressive mental deterioration which was present for eleven to fifteen years and culminated in a state of complete mental confusion, amnesia, disorientation and hallucinosis resulted from continuous self medication with large quantities of bromo-seltzer. Recently in THE JOURNAL [3] attention has been called to the dangers of intoxication with bromides and the dangers arising from self medication with certain proprietary preparations containing bromide salts. Other instances of intoxication with bromides as a result of self medication with bromo-seltzer or other preparations have been reported,[2] but they have rarely been of the severity and almost never of the chronicity of the case reported here.

From the Division of Neurosurgery of the University of Chicago Clinics.

1. Curran, F. J.: A Study of Fifty Cases of Bromide Psychosis, J. Nerv. & Ment. Dis. **88**: 163-192 (Aug.) 1938. Moore, Sohler and Alexander.[2]

2. Moore, M.; Sohler, T., and Alexander, L.: Bromide Intoxication: A Review, Confinia neurol. **3**: 1-52, 1940.

3. Hazards of Bromidism in Proprietary and Uncontrolled Hypnotic Medication: Neurosine (Dios Chemical Company) not Acceptable for N. N. R., J. A. M. A. **115**: 933-935 (Sept. 14) 1940. Bromides in Medicine, editorial, ibid. **115**: 937-938 (Sept. 14) 1940.

REPORT OF CASE

A retired business man aged 66 was admitted to the University of Chicago Clinics on Oct. 18, 1940 with a history of severe mental disturbance of more than eleven years' duration. On October 15 he passed into a state of complete mental confusion. On October 17, because of his uncertain gait, he fell, bruising both knees. Of necessity the history was obtained from members of the family, who stated that the patient had been declining since 1929 with a noticeable thickening of his speech, the development of a shuffling gait and a tendency toward uncleanliness and a steadily progressive state of mental confusion terminating in an extreme state of disorientation just prior to hospitalization.

In 1916 the patient was made executive head of a large manufacturing concern on the sudden death of his father. Evidently he experienced considerable strain in managing the affairs of the company in the next few years and in attempting to extricate it from several financial reverses. In 1929, after several years of litigation, he withdrew from all active participation in the business and suffered a "nervous breakdown." In the next eleven years he spent much time traveling around the country, but occasionally he visited the office. As early as 1925 business associates often remarked to the family that he seemed "queer," and the family noticed that he spent much of his time reading books on psychology and psychiatry. He grew forgetful and became suspicious and distrustful of every one. More recently he had become incapable of following any line of thought for any great period of time.

Physical examination on admission revealed that he was acutely ill, fairly well developed and well nourished. He was restless and made frequent facial grimaces and purposeless movements of his hands and arms. He was completely disoriented in all spheres, not knowing his name or address or the date of the month or the year and being unable to follow a conversation more than four or five words long. There was extreme perseveration noted in his responses to questioning.

The rectal temperature was 99 F., and the skin appeared dry. There were reddened areas on each knee but no evidence of skeletal damage. There were multiple dry, reddened papules on both legs and on both arms below the elbows. Examination of the heart, lungs and abdomen revealed nothing remarkable. Rectal examination showed moderate enlargement of the prostate gland, which did not seem abnormally hard.

Neurologic examination gave essentially negative results within the limits imposed by the patient's condition. There was no irregularity of the calvarium. The pupils were miotic, measuring 3 mm. in diameter, but were regular and reacted to light. The optic disks appeared normal in color and were not elevated. There was only minimal sclerotic change visible in the retinal vessels. Extraocular movements were full and without nystagmus, and there was no ptosis of the lids. There was no facial weakness. A pinprick was appreciated over the entire face, and the corneal reflexes were equal. The sound from a tuning fork seemed to be perceived in both ears, and the palate and tongue moved in the midline. As mentioned before, there were purposeless movements of the upper extremities, but strength in all four extremities appeared good. The deep tendon reflexes were present and bilaterally equal. The plantar responses were flexor. The patient was unable to stand or walk. There was no nuchal rigidity or positive Kernig sign.

The patient was incontinent of both urine and feces.

A routine laboratory examination of the blood showed erythrocytes 4,700,000, leukocytes 11,150 and hemoglobin 13 Gm. A smear of the blood was reported as normal, and the differential count showed 74 per cent neutrophils, 22 per cent lymphocytes and 4 per cent monocytes. Except for an occasional red blood cell in the sediment, the urine was normal. The blood Wassermann and Kahn tests gave negative results. On two different occasions the nonprotein nitrogen content of the blood was 27.6 mg. and 30 mg. per hundred cubic centimeters.

Roentgenograms of the skull showed generalized osteoporosis of all the cranial bones. The pineal gland was calcified and was in the midline.

Lumbar puncture was performed, and the initial pressure was 170 mm. of fluid. The cerebrospinal fluid was clear and colorless and contained 8 lymphocytes per cubic millimeter. The Pandy reaction was positive. The total protein content was 78 mg. per hundred cubic centimeters. The spinal fluid Wassermann test gave negative results, and the colloidal gold curve was flat.

It was thought that the patient was suffering from an organic psychosis, in all probability presenile dementia or Alzheimer's disease, and the members of the family were so informed. Institutionalization was considered advisable. It was then learned that for many years the patient had been taking large amounts of bromo-seltzer daily. His wife stated that she first became aware that he was taking bromo-seltzer on the day of their marriage in 1900. He had suffered from headaches of a migrainous character which occurred approximately once a month during most of his adult life, and he sought relief from these by an occasional dose of this proprietary preparation. In 1924, at the time of severe business reverses, he began taking bromo-seltzer daily and in ever increasing doses in order to relieve the nervous strain. It was not long until he frequently consumed a "50 cent" bottle a day. In 1925 business associates began to comment to the family on his mental state. Gradually he became secretive about his habit and hid the empty bottles. Soon the neighborhood pharmacists refused to sell him any more bromo-seltzer and he had to seek it at stores farther from his home. In 1929 he suffered what was termed a "nervous breakdown." He and his wife then took a vacation in Colorado and he stopped taking the drug for a time. On returning from his holiday he was much better for a short time, but he soon began to take the bromo-seltzer again, and his mental condition resumed its steady downhill course. The consumption of large quantities of bromo-seltzer, either a 50 cent or a 25 cent bottle[4] a day, was continued until his admission to the hospital on October 18.

On October 22 a blood bromide determination showed the presence of 275 mg. of sodium bromide per hundred cubic centimeters. The patient was placed on a high fluid intake and subsequently was given as much as 5 Gm. of sodium chloride daily by mouth. Samples of blood were drawn at frequent intervals, and the bromide level was determined by two methods, as shown in the accompanying table. It will be seen that at first the level dropped rapidly and then more gradually. We do not know what the blood concentration was on admission. It should be noted that the drop in blood concentration closely follows the patient's clinical improvement. One sample of blood was analyzed for methemoglobin by Dr. C. W. Muehlberger, but none was found.

During the first few days of hospitalization the nurses reported many examples of active visual and auditory hallucinations. The patient saw fish and snakes on the ceiling frequently and on one occasion reported that his mother-in-law was peeking over the transom. He frequently heard the howling of dogs and the noise of fire engines.

By October 25 he was beginning to appreciate his surroundings and could give his address, his age and the date correctly. He was able to read but had difficulty interpreting the content. He was still incontinent of urine at times.

4. Since Oct. 1, 1939 the amount of bromide salts per ounce of bromo-seltzer has been reduced by the manufacturer,[5] although we understand that the older stocks with the higher bromide content have not been recalled from the retailers. Analyses made in the chemical laboratory of the American Medical Association indicate that bromo-seltzer manufactured since Oct. 1, 1939 contains 6.1 per cent of sodium bromide. Analyses made also on bromo-seltzer purchased in the open market by Dr. C. W. Muehlberger show that the older product (carton marked "1, C-38") contained 12.51 per cent of sodium bromide while that now generally available (carton marked "3, F-40") contains 6.42 per cent. A bottle of bromo-seltzer marked 30 cents by the manufacturer and purchasable for 25 cents at local drug stores is said to contain 1 9/32 ounces of bromo-seltzer, and a bottle marked 60 cents and obtainable for 49 cents is said to contain 2¾ ounces of bromo-seltzer. If one applies the analyses just recorded, it is seen that prior to Oct. 1, 1939 a "25 cent" bottle contained 76⁹⁄₁₀ grains (5 Gm.) and a "50 cent" bottle contained 165 grains (10.7 Gm.) of sodium bromide. Since Oct. 1, 1939 a "25 cent" bottle has contained 37½ to 39½ grains (2.4 to 2.5 Gm.), and a "50 cent" bottle has contained 80½ to 84⅔ grains (5.2 to 5.5 Gm.) of sodium bromide.

5. **FDA Reveals Changes in Acetanilid-Bromides**, Drug Trade News **15:** (no. 2) 1 and 25 (Jan. 15) 1940.

On October 28 it was recorded that he appeared well oriented and had considerable insight into his illness and into outside events. Responses to questions were slow and deliberate but in general were accurate. There was a tendency to elaborate on simple details and to philosophize on even minor things. He was able to read and to remember the content of a paragraph some minutes later. He stated that he had taken the bromo-seltzer to relieve nervous strain and for slight headaches. He was able to stand on a wide base, but his gait was unsteady and walking was impossible unassisted.

It was noted on November 4 that his gait was fairly steady and he appeared alert and coherent. He made several mistakes on simple arithmetical problems, but his recall both of past and recent events was fairly good. There was a tendency to cover up lapses in his knowledge or memory by clever confabulation.

Improvement continued steadily, and by November 19, just prior to discharge, he was taking daily walks of 1 to 2 miles and was discussing his former business, financial and family affairs with facility and accuracy. He could be diverted from a subject without losing the main trend. He still cleverly filled in gaps in his knowledge by fabrication. He was inclined

Level of Bromide in Blood and Urine During Treatment

	Blood Serum Bromide					Urinary Bromide			
	Gold Chloride Colorimetric Method *		Klaas Distillation Method †						
Date	Sodium Bromide, Mg. per 100 Cc.	Bromide Ion, Mg. per 100 Cc.	Sodium Bromide, Mg. per 100 Cc.	Bromide Ion, Mg. per 100 Cc.	Blood Serum Chloride	Volume, Cc.	Sodium Bromide, Mg. per 100 Cc.	Bromide Ion, Mg. per 100 Cc.	Output as Sodium Bromide, Gm.
10/22/40	275	214	...	...	.....	.....	..	....	....
10/25/40	187	145	...	...	.....	.....	..	....	....
10/.6/40	...	...	...	...	.....	3,900	62	46.6	2.4
10/28/40	156	121	169	131	.....	.....	..	....	....
10/31/40	120	94.2	...	...	89.2 mM/L (total halogen of 110 mM/L)	.....	..	....	....
11/ 3/40	...	...	...	...	.....	3,100	50	38.8	1.55
11/ 4/40	100	77.6	90	69.5					
11/ 7/40	91	70.7	...	...					
11/ 9/40	84.5	65.8	51	41					
11/15/40	55.9	43.4	16.5	11					
11/19/40	50	38							
11/28/40	21	16.3							
12/ 4/40	Too little to read								

* Wuth, Otto: Rational Bromide Treatment: New Methods for its Control, J. A. M. A. **88**: 2013-2017 (June 25) 1927.

† Klaas, Rosalind: Personal communication to the authors. Determinations made by Dr. G. Weber Schimpff in the Biochemical Laboratories of the Cook County Hospital.

also to attribute ulterior motives to every one he discussed, with the exception of his wife, his son and the members of the hospital personnel. He stated that he had no desire for bromo-seltzer at the time of discharge. Furthermore, no sedatives of any sort had been required during his five weeks of hospitalization.

At the time of his discharge from the hospital on November 21 it was obvious that some defect in memory, particularly of relatively recent events, and much preoccupation with the period from 1916 to 1924 still persisted. However, his family repeatedly stated that his mental state was much improved over that of the several years prior to admission to the hospital, and it has continued to improve since he has been discharged.

When last seen on December 16, the patient was in excellent spirits and appeared to be in good physical and mental health for his age.

COMMENT

There can be no doubt in view of the history obtained from the family and from the patient after his recovery that unusually large quantities of bromide had been consumed daily over many years in this case. Nor can there be any doubt in the light of the high bromide content of the blood found initially and the parallel improvement in the mental state and the decline in the concentration of bromide in the blood which subsequently occurred that this man's severe symptoms of psychic disturbance were the result of bromide intoxication which developed secondarily to self medication with bromo-seltzer. It is, however, not possible to state whether the present relatively mild mental abnormalities which still persist are also the result of a reversible change and will improve in the near future or whether they constitute a permanent defect which has been produced by the long-continued ingestion of bromides, by possible cerebral arteriosclerosis or by some other form of cerebral degeneration.

SUMMARY

The long-continued use of large amounts of bromo-seltzer caused a bromide intoxication which produced a steadily progressive mental deterioration that culminated in a state of complete disorientation, amnesia and hallucinosis. Discontinuance of the drug resulted in distinct improvement.

PHEOCHROMOCYTOMA

CORRECT DIAGNOSIS AND SUCCESSFUL OPERATION

FREDERICK K. HEATH, M.D.; GEORGE F. CAHILL, M.D., AND DANA W. ATCHLEY, M.D., NEW YORK

Although the syndrome of paroxysmal hypertension due to a chromaffin tumor of the adrenal gland has been thoroughly reviewed by several authors,[1] it remains a rare disease. Thus in 1939, seventeen years after Labbé, Tinel and Doumer [2] gave the first clinical description, Eleanor Humphreys [3] could find in the literature only 103 cases. Many of the reports represent pathologic studies, accidental postmortem observations or, in cases in which the diagnosis had been made, postoperative death. Hence since 1929, when Pincoffs [4] reported the first case in which a successful operation followed a correct diagnosis, there have been relatively few reports. For these reasons it is believed that the following detailed case history is of interest.

REPORT OF CASE

History.—E. C., a woman aged 49, was admitted to the private pavilion on Feb. 5, 1940 complaining of attacks of "blood pressure."

Her father had died at the age of 45 of pneumonia and her mother at 56 from cancer of the gastrointestinal tract. One brother had died at 58 of possible myocardial infarction following a period of heart trouble. Her maternal grandmother had died of diabetes. There was no family history of hypertension, nephritis or disease similar to that of the patient.

She had been married in 1911 and divorced in 1939. There were two children, a 28 year old son who was in good health and a 26 year old daughter who was well except for occasional attacks of palpitation and generalized tremor, for which she had had several medical examinations said to have given negative results. The patient consumed three or four cups of coffee and one to two cups of tea and smoked a package of cigarets each day. Her present and average weight was 125 pounds (56.7 Kg.).

Her past health she considered good, but she thought of herself as "high strung." At the age of 8 years she had had scarlet fever without known renal complications. When she

From the Departments of Medicine and Urology, Columbia University College of Physicians and Surgeons, the Presbyterian Hospital and Squier Urological Clinic.

1. Wells, A. H., and Boman, P. G.: Clinical and Pathologic Identity of Pheochromocytoma, J. A. M. A. **109**: 1176 (Oct. 9) 1937. Belt, A. E., and Powell, T. O.: Clinical Manifestations of the Chromaffin Cell Tumors Arising from the Suprarenal Medulla, Surg., Gynec. & Obst. **59**: 9 (July) 1934.

2. Labbé, Marcel; Tinel, Jules, and Doumer: Crises solaires et hypertension paroxystique en rapport avec une tumeur surrénal, Bull. et mém. Soc. méd. d. hôp. de Paris **46**: 982 (June 23) 1922.

3. Brunschwig, Alexander, and Humphreys, Eleanor: Excision of Pheochromocytoma Following Near Fatal Attack of Paroxysmal Hypertension, J. A. M. A. **115**: 355 (Aug. 3) 1940.

4. Pincoffs, M. C.: A Case of Paroxysmal Hypertension Associated with Suprarenal Tumor, Tr. A. Am. Physicians **44**: 295, 1929.

was in boarding school and directly after her marriage she had been subject to frequent attacks of syncope brought on either by changing rapidly from a sitting to a standing position or by hot baths or any disagreeable episode. No cause had ever been found for these attacks, and there had been none in twenty years. For an indefinite period the patient had noted palpitation and a precordial "tired" feeling not related to the attacks to be described hereafter. Her pulse rate had always been between 60 and 70. She had had no edema at any time and no dyspnea or orthopnea beyond that present during her attacks.

She had experienced one attack of jaundice in her teens but except for a tendency to watery diarrhea when nervously upset had suffered no other gastrointestinal symptoms. At the age of 20 she had had an appendectomy at another hospital for acute appendicitis and had made a good recovery. In 1936 her gallbladder had been removed at another hospital during a pelvic operation, presumably because it was found to contain stones. Since then she had noted epigastric fulness and eructation after meals.

Menarche had been at the age of 13; her menses occurred every twenty-eight days and lasted five days. After their onset she had suffered from severe headaches, often unilateral, associated with nausea, vomiting, blurring of vision and spots before the eyes. These episodes lasted one to three days, occurred monthly but bore no constant temporal relationship to the cycle. After oophorectomy in 1936 they decreased definitely in severity. In March 1936 dilation and curettage, oophorectomy on the right side, plication of the round ligaments and cholecystectomy had been done at another hospital because of metrorrhagia and pain in the right lower quadrant of the abdomen of two and one-half months' duration. The pathologic diagnoses were endometrial hyperplasia, follicular cyst of the ovary, cholesterosis and chronic cholecystitis with cholelithiasis. Her postoperative course was stormy because of a mechanical ileus and acute cystitis. At this time her blood pressure was reported as 104 systolic and 62 diastolic and her abdomen was said to

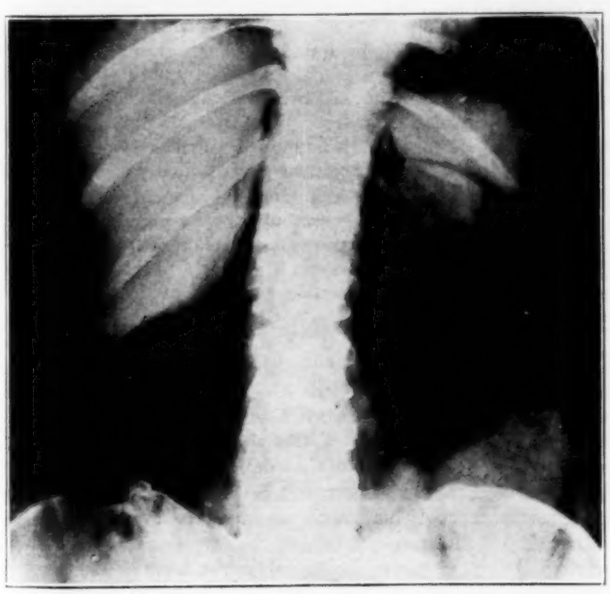


Fig. 1.—Appearance after injection of air into the perirenal spaces. There is a shadow of increased density in the right adrenal area.

reveal no palpable masses. After these procedures the menses had been irregular until the summer of 1937, when she had mild menorrhagia. They then returned to normal rhythm and duration until the summer of 1939, when the flow became irregular and scanty and finally ceased except for one period in December 1939. For twenty years she had pain low in the back which was more severe on the left side. Ten years previously she had been a patient in an orthopedic hospital, and an operation on the lumbar portion of the spine had been considered. Instead she was given a canvas brace, which she wore steadily with relief until seven years before admission, since when she had had to use it only rarely.

The patient dated the onset of her present illness at about the spring of 1938, when she had noted increased emotional instability, with episodes of hysterical crying. At this time, too, if she became upset by a trivial incident there were spells lasting fifteen minutes during which she trembled all over and had a sensation of swelling and fulness in her neck and throat. A physician suggested that her symptoms were menopausal in origin and prescribed 5 grains (0.32 Gm.) of ovarian extract three times daily, which she took without relief. During the autumn of 1938 she experienced four somewhat more severe attacks. These were not initiated by an emotional incident, were not related to meals and occurred in the morning or in the evening. Their onset was characterized by a "tight feeling" in the calves and forearms, then by a "nervous, jittery feeling" followed by generalized coarse tremor of the head and extremities, fulness in the neck, blurring of vision, a sensation of shortness of breath which made her want to breathe fast and, finally, by severe palpitation and "pounding" headache in the left occipital region. The attacks lasted about thirty minutes and were followed by a period of weakness, tiredness and precordial soreness.

Fig. 2.—Drawing of roentgenogram (fig. 1) by Dr. George Cahill. The shaded area represents tumorous tissue about the adrenal gland.

She was then free of attacks until August 1939. When they returned they continued with increasing frequency and severity, until at the time of admission she was having at least one, occasionally two or three, every twenty-four hours. During the preceding month, nausea and vomiting had been present toward the end of many attacks. During the six months prior to her entry, she had received thyroid, pituitary and ovarian preparations, had been given a high carbohydrate diet with frequent feedings and had taken various sedatives and glyceryl trinitrate, all without benefit. Early in January 1940, while she was undergoing a dextrose tolerance test, an attack occurred and her blood pressure reached 233 systolic and 80 diastolic, dropping to 100 systolic and 70 diastolic after the episode. She was making no progress and was therefore admitted to the hospital.

Examination.—The patient was well nourished and sallow skinned and did not appear ill. The temperature, pulse rate and respiratory rate were normal. The blood pressure was 100 systolic and 70 diastolic. The remainder of the examination gave essentially negative results. The fundi were normal. The heart was not enlarged, the rate was regular, there were no murmurs and the second aortic sound equaled the second pulmonic sound. The lower pole of the right kidney was palpable. The weight was 125¼ pounds (56.8 Kg.).

The hemoglobin content was 13.1 Gm. (Sahli), the red blood cell count 4,480,000 and the white blood cell count 13,700, with a normal differential count. The maximum specific gravity of the urine was 1.03, there was no albumin at any time and microscopic examination showed only 2 to 3 leukocytes per high power field. The sedimentation rate of the erythrocytes was 8 mm. in one hour, and the Wassermann reaction of the blood on Dec. 26, 1939 had been reported negative. The stool, examined routinely, showed guaiac (1 plus) on one occasion. The basal metabolic rate was —4 per cent. An electrolyte partition of the serum gave the following values (during fasting): in milliequivalents per liter, carbon dioxide (content) 29.1, chlorides (as sodium chloride) 99.3, inorganic phosphorus 2.1, albumin 12.8, globulin 4.3, sodium 136.7, potassium 4.3 and calcium 5.1; in milligrams per hundred cubic centimeters,

protein 7.6, nonprotein nitrogen 32, sugar 79 and cholesterol 240; bilirubin, a trace, and phosphatase 4.3 Bodansky units per hundred cubic centimeters.

A roentgenogram of the heart showed the following measurements: medial right, 4.5 cm.; medial left, 7 cm.; transverse diameter, 11.5 cm., and great vessels, 5 cm., with the internal diameter of the chest 26.5 cm. The venous pressure on resting was 75 mm. of physiologic solution of sodium chloride. Roentgen examination of the lungs and the skull gave negative results. A roentgenogram of the genitourinary tract showed no abnormalities, but roentgenograms made after injection of 300 cc. of air into both perirenal spaces (figs. 1 and 2) were interpreted by Dr. George F. Cahill as showing "a low right kidney with a rather queerly shaped shadow above in the adrenal notch." Dr. Cahill said also "This shadow is denser than that of a normal adrenal gland and has not descended with the kidney." The air on the left side showed the kidney to be of normal size and shape and in the normal position. The adrenal shadow on the left was faint and without any area of denser tissue.

While under observation the patient experienced several typical seizures. Data on one of these follow: At 12:30 p. m.

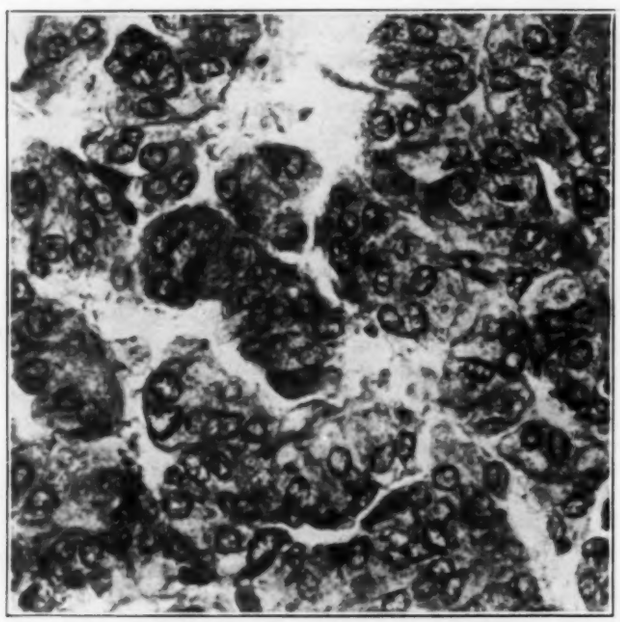


Fig. 3.—Section of tumor (prepared by Dr. A. P. Stout).

the blood pressure was 100 systolic and 70 diastolic, the pulse rate 56 and the respiratory rate 12, as recorded by the patient's nurse. At 1:10 p. m., after a tub bath, the patient noted trembling of her hands and feet. A blood pressure of 150 systolic and 80 diastolic, a pulse rate of 84 and a respiratory rate of 14 were noted at 1:15 p. m. At 1:30 p. m. the blood pressure was 195 systolic and 95 diastolic and the respiratory rate 24. At 1:40, when the blood pressure was 170 systolic and 90 diastolic and the pulse rate 64, the venous pressure was 150 mm. of physiologic solution of sodium chloride. At this time the patient complained of palpitation, pounding occipital headache and nervousness. She was pale, the skin was dry, the voice was quavering, the pupils were in moderate dilatation, there was a coarse tremor of the extremities and the cardiac sounds were loud and forceful but not rapid. The attack had subsided by 1:56 p. m., when the blood pressure was 120 systolic and 62 diastolic, the pulse rate 80, the respiratory rate 12 and the venous pressure 75. The patient felt exhausted.

After similar attacks and despite the failure to induce an attack by the injection of 0/2 ml. of epinephrine subcutaneously, it was decided to explore the right adrenal area. This was done by Dr. Cahill on February 19, with the patient under anesthesia with avertin with amylene hydrate, a gas-oxygen mixture and ether.

We quote from the operative note: "The incision was carried by blunt dissection down to the fossa lying between the liver and the upper portion of the psoas on the right side, where without great difficulty the right adrenal gland was located. The adjacent fibrous and fatty tissues were dissected carefully away from the adrenal gland, and inspection revealed a rounded tumor mass, pinkish gray and relatively soft, growing out of the upper portion of the lower half of the adrenal gland. An attempt was then made to clean off the remaining portion of the adrenal gland to remove the tumor intact, but in this process it was discovered that the tumor and the adrenal gland were plastered down tightly on the inferior vena cava. The tumor mass was broken after gentle manipulation and removed. The remaining portions of the adrenal capsule and bits of tumor were cleaned up, and the wound was thoroughly irrigated with a 70 per cent solution of alcohol. The remaining portion of the adrenal gland was left intact in its bed." During the manipulation of the tumor the blood pressure rose from 100 systolic to a maximum of 190.

The postoperative course was smooth, with no evidence of shock. During the first three postoperative days the temperature reached 101 F., and thereafter it was normal. The patient was discharged on the sixteenth postoperative day and during the twelve months since has had no return of symptoms.

Specimens for pathologic examination were sent to two laboratories (fig. 2). The report from the department of surgical pathology submitted by Dr. Arthur P. Stout and Dr. Robert P. Hill follows:

"Gross: The specimen consists of three pieces of soft, friable pinkish gray tissue with a combined weight of 5 Gm. Two of these are pale, homogeneous and bulging on the cut surface. There is a thin layer of fibrous tissue on one side. Attached to the third piece is a fragment of adrenal gland having a clearcut medulla and cortex.

"Microscopic: The tumor is composed of medium-sized fairly regular polygonal cells arranged in small solid clusters or irregular cords. They have round vesicular nuclei in which the chromatin material is found in fine, evenly distributed particles. The cytoplasm is pale staining and in the routine staining with hematoxylin and eosin was seen to contain numerous fine eosinophilic granules. With special stains, however, the cytoplasm of these cells is stained either brown or green, according to the type of stain used, the reaction indicating their chromaffin character. The cell membranes are fairly distinct, and the tumor is moderately vascular. The cells are in close proximity to the vascular channels. A portion of normal adrenal gland is included and serves as a control. The cells of the medulla exhibit the same staining reactions as do those of the tumor.

"Diagnosis: Paraganglioma of the adrenal medulla. This is a characteristic adenoma of the pheochromophilic cells of the adrenal medulla. Some of the tissues were fixed in Orth's fluid and stained with hematoxylin and eosin and Giemsa stain. This brought out the fact of the chromaffinity of the tumor cells and of the parent cells in the adrenal medulla. The growth is regular and does not show any of the characteristics of the malignant paraganglioma which we have observed."

Dr. M. M. Melicow, pathologist for the Squier Clinic, who received 3 Gm. of tissue, concurred in the foregoing diagnosis.

SUMMARY

In a typical case of pheochromocytoma of the right adrenal gland in a 49 year old woman a correct diagnosis was made prior to operation and a successful operation was performed. The patient had a smooth postoperative course and has been free of symptoms for one year. Noteworthy in this case were, on the one hand, the difficulties in diagnosis because of the concomitant menopausal symptoms and, on the other, the decisive aid furnished by roentgenograms after the injection of air into the perirenal spaces.

620 West One Hundred and Sixty-Eighth Street.

Special Article

THE IMPORTANCE OF CLOTHING IN AIR CONDITIONING

C. P. YAGLOU, M.S.
AND
ANNE MESSER, A.B.
BOSTON

A serious difficulty in the heating or cooling of buildings lies in reconciling conflicting comfort requirements of men and women. A temperature that is comfortable to men is as a rule too cool for women, and one that is acceptable to women is too warm for men. As a result buildings are usually overheated in winter for the sake of women and overcooled in summer to suit the men.

Constitutional differences between men and women as well as differences in kind and amount of clothing worn are believed to be responsible for the double comfort standard, but according to the present study clothing differences appear to play a major role.

The experiments were carried out in an air conditioned room by exposing healthy men and women subjects, mostly employes of the school, to ordinary air conditions that prevailed in the laboratories and offices of the school on the day of the experiment. This procedure simplified considerably the acclimatization problem. The subjects dressed and ate normally before coming to the tests in the morning or afternoon, and during the experiments they sat in school arm chairs and read, wrote or conversed. In a special series of tests women were dressed in men's clothes and men in women's. A minimum of two hours was allowed for adaptation before making final observations of skin, clothing and body temperatures, metabolic rates and sensations of comfort.

Surface temperatures of clothes and exposed skin were measured with a radiation thermopile, and skin temperatures under the clothing with thermocouples. Mean skin and clothing temperatures for the whole body were computed from measurements on seventeen representative areas of the body, using Du Bois's [1] segmental surface areas for weighing the readings.

When men and women, wearing their customary winter clothing, were in equilibrium with air and walls at 72 F., a relative humidity of about 30 per cent and an air movement of approximately 20 feet per minute, the mean skin temperature of women was about 2 degrees F. lower than men's, while the mean clothing [2] temperature was 2 degrees higher (table 1). On an average, the hands and feet of women were almost 5 degrees cooler than men's, the arms 4 degrees cooler, the legs and head 2.5 degrees cooler and the trunk only 0.5 degree cooler than men's. Under these conditions most of the men were comfortable, but the women generally were cold. To make most of the women comfortable, the air and wall temperatures had to be raised to 76 F., but the men were too warm at this temperature. Under comfortable conditions (71.5 F. for men, 76 F. for women) the mean skin temperature of men and women was almost the same (92 ±) but the mean clothing temperature of women was about 5 degrees higher (table 2).

In unclothed subjects under basal conditions, Hardy and Du Bois [3] have likewise found a higher skin temperature in men than in women under identical calorimeter conditions, but the same skin temperature under comfortable air conditions.

In warm summer weather, when air and wall temperatures averaged 80 F. in our tests, the women were comfortable but most of the men were too warm. The mean skin temperature of women was still a degree lower than men's and their clothing temperature a degree higher (table 1). These differences disappeared at about 94 F., when skin and clothing temperatures approached air temperature.

When men and women wore similar clothes they were comfortable at about the same environmental temperature, despite the great difference in their metabolic rates (table 2). With a minimum of clothing a temperature between 82 and 83 F. satisfied both sexes. When men were dressed in women's summer clothes weighing 0.8 pound (excluding shoes) they wanted a temperature of 80 F., which is about as high as that preferred by women similarly dressed (table 2). But when the men wore their own summer clothes (3.0 pounds) they wanted a temperature of 76 F.

Conversely, when women wore men's winter clothes, weighing 6⅕ pounds instead of their own 1½ pounds, a temperature of 72 F. was required, which is only 0.5 degree higher than that preferred by men wearing similar clothes. The unusually low clothing temperature of women shown in table 2 is ascribed to the fact that men's clothing was too large for them and the area for heat loss was thereby increased considerably.

In all but a few subjects, comfort was associated with mean skin temperatures between 91.5 and 93.5 F. in both men and women regardless of air temperature, which varied from 53.5 to 84 F., amount of clothing worn (0 to 14.5 pounds) and season of the year. The mean skin temperature of women appears to be on an

TABLE 1.—*Normal Skin and Clothing Temperatures of Twenty-Two Men and Twenty-Eight Women Under Ordinary Sedentary Conditions*

	Winter: Air and wall temperature, 72 F. Relative humidity, 30% Air movement, 20 feet per minute ±				Summer: Mean air and wall temperature, 80 F. Relative humidity, 55% Air movement, 20 feet per minute ±			
	Mean Skin Temperature, F.		Mean Clothing Temperature, F.		Mean Skin Temperature, F.		Mean Clothing Temperature, F.	
Body Segments	Men	Women	Men	Women	Men	Women	Men	Women
Head.....	91.3	88.7	91.5	88.7	93.2	91.8	93.2	91.8
Arms.....	92.5	88.4	82.5	87.7	94.3	92.8	90.1	91.4
Hands....	92.2	87.8	92.3	87.8	95.0	94.6	95.0	94.6
Trunk....	94.4	93.9	80.7	83.3	94.4	94.9	87.5	88.9
Legs.....	91.6	89.3	82.5	84.2	93.4	91.1	87.4	89.6
Feet.....	90.0	85.2	84.7	83.5	93.2	91.5	89.8	91.2
Weighted mean.....	92.5	90.4	83.0	84.9	93.9	92.8	88.8	90.1
	Comfortable	Cold	Comfortable	Cold	Warm	Comfortable	Warm	Comfortable

From the Department of Industrial Hygiene, Harvard School of Public Health, Boston.

This is the seventh report of the American Medical Association's Committee to Study Air Conditioning. Members of the committee are Carey P. McCord, Detroit, chairman; Walter M. Simpson, Dayton, and Constantin P. Yaglou, Boston.

1. Du Bois, Delafield, and Du Bois, Eugene F.: The Measurement of the Surface Area of Man, Arch. Int. Med. **15**: 868 (May) 1915.

2. Including surface temperature of clothes and exposed skin.

3. Hardy, J. D., and Du Bois, E. F.: Differences Between Men and Women in Their Response to Heat and Cold, National Academy of Sciences **26**: 389-398 (June) 1940.

average half a degree lower than men's under comfortable conditions (table 2). Although this might be attributed to women's thicker layer of subcutaneous tissues, the difference is within the error of measuring skin temperatures.

The close relationship between mean skin temperature and comfort does not hold during heavy muscular work or during abrupt vascular changes, such as occur on exposure to sharp temperature contrasts in warm weather.

The mean surface temperature of clothing and exposed skin is definitely a poor index of comfort. It varied from 67.5 to 92.0 F. in out tests under comfortable conditions, depending largely on clothing. The wearing of additional clothes always lowered the clothing surface temperature and increased the mean skin temperature and sensation of warmth.

TABLE 2.—*Effect of Clothing on Skin Temperature and Comfort*

	(Air movement, 20 feet per minute±)						
	Mean Clothing Weight, Lbs., Excluding Shoes	Comfortable Air Conditions		Mean Body Temperatures		Metabolic Rate Calories per Hr.	No. of Persons
		Mean Temperature, F	Relative Humidity %	Skin, F.	Clothing, F.		
Men							
Shorts or unclothed	0.1	82.3	52	93.0	....	93	8
Women's summer clothes	0.8	80.0	50	92.3	89.3	87	2
Men's summer clothes	3.0	76.0	52	93.2	86.1	94	17
Men's indoor winter clothes	6.4	71.5	24	92.3	82.6	95	18
Men's outdoor winter clothes	14.5	55.3	45	91.8	67.6	98	2
Women							
Shorts and brassière	0.2	82.7	48	92.3	92.1	65	7
Women's summer clothes	0.7	79.5	55	92.7	90.3	64	23
Women's winter clothes	1.5	76.0	34	91.9	87.5	63	23
Men's winter clothes	6.2	72.0	25	91.9	78.8	66	6

Except in warm and humid atmospheres, humidity had no appreciable influence on the results. Oral and rectal temperatures have likewise shown no significant changes with variations of temperature and clothing within the limits of our tests.

CONCLUSIONS

The conclusion to be drawn from this study is that differences of comfort standards between men and women, and individual differences, are largely due to differences in dress and can be reconciled by adjustments of clothing, according to susceptibility to cold or heat.

If women would dress in winter with clothes that are comparable in warmth to those of men, they would be comfortable in a temperature of about 72 F. instead of 76 F., and there would be less discord over the matter of room temperature. Conversely, if men would take off their vests, coats and collars in hot weather, buildings would not have to be cooled below 83 F. instead of 76 to 80 F. as at present, and difficulties now experienced with sharp temperature contrasts would be alleviated.

Incidentally, reconciliation of the double comfort standard would also greatly simplify the problem of the engineer and would reduce the expense of heating and cooling buildings.

55 Shattuck Street.

Council on Physical Therapy

COUNCIL ON PHYSICAL THERAPY

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING CHAPTER, WHICH IS THE EIGHTH OF A SERIES ON AMPUTATIONS AND ARTIFICIAL LIMBS TO APPEAR IN THIS COLUMN. WHEN COMPLETED, THE SERIES WILL BE PUBLISHED IN THE FORM OF A HANDBOOK ON AMPUTATIONS. THE COUNCIL WISHES TO EXPRESS ITS APPRECIATION FOR THE COOPERATION OF ITS GROUP OF CONSULTANTS ON ARTIFICIAL LIMBS. THE COUNCIL IS REPRESENTED BY DRS. FRANK D. DICKSON, HARRY E. MOCK, FRANK R. OBER, S. PERRY ROGERS, PAUL STEELE AND PHILIP WILSON, AND THE ASSOCIATION OF LIMB MANUFACTUERS OF AMERICA IS REPRESENTED BY MESSRS. MCCARTHY HANGER SR., W. E. ISLE, JOSEPH A. SPIEVAK, DAVID E. STOLPE AND J. B. KORRADY.

HOWARD A. CARTER, Secretary.

CHAPTER IX. REHABILITATION

It has been stated repeatedly in previous chapters that the responsibility of the surgeon performing an amputation does not end with the healing of the wound, that it includes postoperative care of the stump, advice in selection of a suitable prosthesis and supervision of the patient and the stump until both have become accustomed to its use. Supervision of the whole process of rehabilitation is tedious enough when the patient's economic status permits him to pay his own way. When the patient is indigent or semi-indigent, when he has perhaps occupied a charity bed in the hospital and has been unable to pay his surgeon any fee, he has the further problem of finding a person or agency willing to buy him a prosthesis and perhaps to train him for and provide him with employment. In this predicament he naturally turns to his surgeon for advice.

Charity begins at home—and ends with the federal government. Almost every patient has relatives or friends who can and, if properly approached, will provide the purchase price of his first artificial appliance. Failing this, every community contains some charitable individual or some group, religious, fraternal or charitable, that will provide the necessary funds. Assistance from a local source usually involves a minimum of delay and "red tape." The problem is frequently easier among the personal relationships of a small community than among the impersonal agencies of a great city. In either situation the surgeon is in a better position to know of the most suitable person or agency than is the indigent patient.

Industrial accidents resulting in amputation are usually covered by workmen's compensation, supervised by a state industrial commission. In twenty-one states the compensation act provides for the purchase of a prosthesis in addition to a specific award for loss of a member.

Federal vocational rehabilitation dates back to an act of 1918 pertaining to disabled soldiers, sailors and marines, followed by an act of 1920 affecting persons disabled in industry and otherwise. The promotional work is in charge of a director of vocational rehabilitation, office of education, now a part of the Federal Security Agency. Its operation is now effective in all states, Hawaii, Puerto Rico and the District of Columbia, under state vocational rehabilitation agencies.

Vocational rehabilitation is primarily not social service, compensation, physical rehabilitation, provision of prostheses, training, employment nor charity. It is defined as "the rendering of a physically disabled person fit to engage in a remunerative occupation." Physical rehabilitation is never undertaken directly. Braces and artificial limbs are purchased only as a necessary step in a complete plan for vocational rehabilitation of an individual considered by his case worker as eligible and feasible for return to employment. The lower age limit for cases is thus automatically set at 16 years. Application for consideration is made to the state supervisor of vocational rehabilitation.

Another federal agency concerned is the Children's Bureau of the Department of Labor, which administered the section in the Social Security Act providing federal aid to the states for services for crippled children. State units approved by the chief of the Children's Bureau conduct surveys, keep records, hold diagnostic clinics, authorize and perform surgical and manipulative operations, provide orthopedic nursing, purchase braces and artificial limbs, and cooperate with other state agencies concerned with children. Benefits are limited to persons under 21 years of age. This agency is concerned directly with physical rehabilitation without reference to vocational training or employability. It may provide primary amputations and reconstructive operations on stumps, as well as purchase artificial limbs.

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. HOWARD A. CARTER, Secretary.

NASALATOR ACCEPTABLE

Manufacturer: Frederick Stearns & Company, Detroit.

The Nasalator is designed for the intranasal application of medicaments and consists of a 10 cc. capped plastic container calibrated to 10 cc. Medicament is introduced through an inlet hole near the top of the container. An inner tube attached to an orifice at the top is fitted in the container; suction applied to the orifice creates a fine spray of liquid, the height and volume of which depend on the pressure variation. The cap is equipped with rubber plugs to seal the orifice and inlet hole when not in use.

In use, the Nasalator is held in the hand and the tip is inserted in firm contact with the nostril. According to the manufacturer a rapid inhalation produces a generalized distribution of a fine spray of the medicament throughout the nasal mucosa. The device may also be used as a medicine dropper by tilting the head and device and closing the inlet hole.

Nasalator.

On examination by the Council the Nasalator was found to be convenient in size and shape. Unless subjected to unduly rough handling, it is safe to carry on the person without soiling the clothing. It is readily cleaned on the outside but difficult to clean inside, so that one particular medicament should be used with each nasalator.

Aqueous solutions were found to vaporize well when the technic was followed properly. Difficulty might arise in cases in which the naris is small and the vestibule collapses, causing the outlet of the nasalator to become blocked. In cases of nasal obstruction due to inflammatory swelling, it functions well as a dropper provided the patient assumes the proper position and follows the directions carefully.

The Council on Physical Therapy voted to accept the Nasalator for inclusion on its list of accepted devices.

VAPOR-ALL VAPORIZERS MODELS EV6 AND EV10 ACCEPTABLE

Manufacturer: Sanit-All Products Corporation, Greenwich, Ohio.

The Vapor-All Vaporizers, Models EV6 and EV10, are designed to be used as inhalator-humidifiers. Heating elements encased in the units operate on alternating current, 118 volts, and are equipped with thermostats for controlling the current, which will be automatically turned off if the water container has boiled dry. The water level is visible through a glass container. Directional vapor tubes, bottles, medicine cups, clamps, carrying handles and cords are supplied. The devices have polished copper boilers with aluminum trim.

Vapor-All Vaporizers, Models EV6 and EV10.

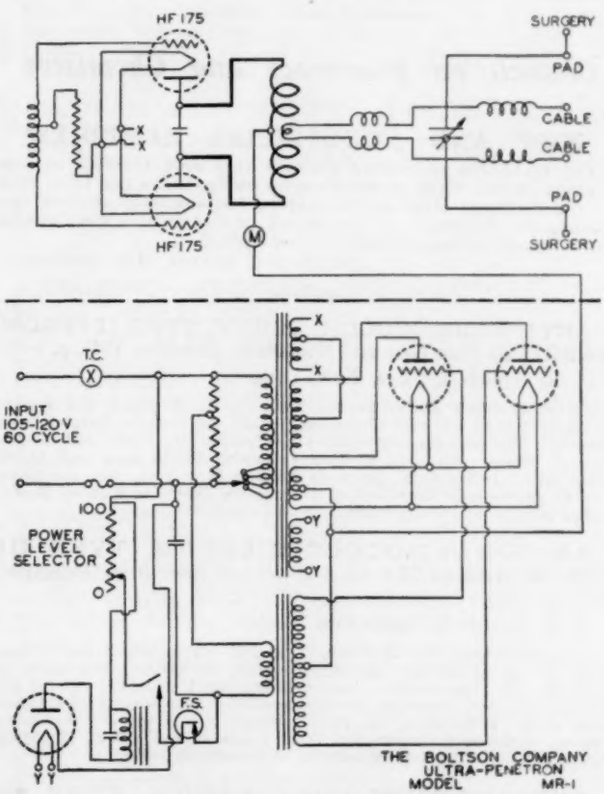
Vaporizer Model EV6 is said to operate continuously for one hour without refilling, and Model EV10 for ten hours in the same manner. Investigation by the Council verified this information. A fountain feed supplies a flow of water to the heater. Medicated inhalations may be administered by use of a separate medicine chamber.

The Council voted to accept the Vapor-All Vaporizers, Models EV6 and EV10 for inclusion on its list of accepted devices.

BOLTSON ULTRA-PENETRON SHORT WAVE UNIT MODEL MR-1 ACCEPTABLE

Manufacturer: The Boltson Company, 45 Astor Place, New York.

The Boltson Ultra-Penetron Short Wave Unit, Model MR-1, is designed for use in medical and surgical diathermy. For medical diathermy the apparatus is supplied with various pad applicators and induction cable. Two outlet circuits are used for surgical diathermy; in monopolar cutting, coagulation and



Schematic diagram of circuit.

fulguration one jack is used, and for bipolar work a special handle is used permitting the use of both surgical terminals.

Tests performed by the Council reveal the physical characteristics of the apparatus to be satisfactory. Employing the lamp load method and operating the unit on a 110 volt line, a power output of 350 watts and a power input of 930 watts were obtained. After a two hour run at this output the final temperature of the transformer was 98.9 C., which is within the limits of safety prescribed by the Council.

Boltson Ultra-Penetron Short Wave Unit, Model MR-1.

The Boltson Ultra-Penetron Short Wave Unit, Model MR-1, was examined clinically by the Council and was found to be simple and efficient in its operation, utilizing all technic with which it is equipped.

As evidence of the unit's efficiency in producing heat deep within human tissues, the following data were presented by the firm:

Technic: Double cuff. Cuffs 19 by 2¼ inches, felt spacing 19 by 2 by ⅝ inches; plate current averaged 220 ma.

Average of Six Observations

Tissue Temperature ° F		Oral Temperature ° F	
Initial	Final	Initial	Final
98.4	106.3	98.2	98.4

The Council voted to accept the Boltson Ultra-Penetron Short Wave Unit, Model MR-1, for inclusion on its list of accepted devices.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

THEODORE G. KLUMPP, M.D., Secretary.

ANTIPNEUMOCOCCIC SERUM, TYPE II (FROM RABBITS) (See New and Nonofficial Remedies, 1941, p. 448).

E. R. Squibb & Sons, New York.

Antipneumococcic Rabbit Serum, Type II.—It is refined and concentrated by salting out with ammonium sulfate, the globulin fraction being retained. The final product contains merthiolate 1 in 10,000 and 0.2 per cent of phenol. Marketed in vials containing 20,000 units and 50,000 units each. Included in the trade package is a 5 cc. vial containing 0.05 cc. of the same concentrated rabbit serum diluted in 5 cc. of physiological solution of sodium chloride for the sensitivity test.

ANTIPNEUMOCOCCIC SERUM, TYPE III (FROM RABBITS) (See New and Nonofficial Remedies, 1941, p. 449).

E. R. Squibb & Sons, New York.

Antipneumococcic Rabbit Serum, Type III.—It is refined and concentrated by salting out with ammonium sulfate, the globulin fraction being retained. The final product contains merthiolate 1 in 10,000 and 0.2 per cent of phenol. Marketed in vials containing 20,000 units and 50,000 units each. Included in the trade package is a 5 cc. vial containing 0.05 cc. of the same concentrated rabbit serum diluted in 5 cc. of physiological solution of sodium chloride for the sensitivity test.

ANTIPNEUMOCOCCIC SERUM, TYPE IV (FROM RABBITS).—An antiserum obtained from the blood of an animal of the genus Lepus, containing predominantly antibodies for type IV pneumococcus (Diplococcus pneumoniae).

Dosage.—Average dose, 20,000 to 100,000 units intravenously. The initial and subsequent dosage should be administered in such amount and at such intervals as indicated by the condition of the patient, according to the judgment of the physician. With a large initial dose, fewer units may be curative. The Francis cutaneous test (injection of specific pneumococcic capsular polysaccharide) may be used in conjunction with clinical observations to determine adequacy of dosage.

E. R. Squibb & Sons, New York.

Antipneumococcic Rabbit Serum, Type IV.—It is refined and concentrated by salting out with ammonium sulfate, the globulin fraction being retained. The final product contains merthiolate 1 in 10,000 and 0.2 per cent of phenol. Marketed in vials containing 20,000 units and 50,000 units each. Included in the trade package is a 5 cc. vial containing 0.05 cc. of the same concentrated rabbit serum diluted in 5 cc. of physiological solution of sodium chloride for the sensitivity test.

ANTIPNEUMOCOCCIC SERUM, TYPE V (FROM RABBITS) (See New and Nonofficial Remedies, 1941, p. 449).

E. R. Squibb & Sons, New York.

Antipneumococcic Rabbit Serum, Type V.—It is refined and concentrated by salting out with ammonium sulfate, the globulin fraction being retained. The final product contains merthiolate 1 in 10,000 and 0.2 per cent of phenol. Marketed in vials containing 20,000 units and 50,000 units each. Included in the trade package is a 5 cc. vial containing 0.05 cc. of the same concentrated rabbit serum diluted in 5 cc. of physiological solution of sodium chloride for the sensitivity test.

HALIBUT LIVER OIL WITH VIOSTEROL (See New and Nonofficial Remedies, 1941, p. 574).

McKesson's Halibut Liver Oil with Viosterol (A. R. P. I. Process) in Oil.—A brand of halibut liver oil with viosterol-N. N. R.

Manufactured by the International Vitamin Corporation, New York (McKesson & Robbins, Inc., distributor). No U. S. patent or trademark. The viosterol used is manufactured under U. S. patent 1,680,818 (Aug. 14, 1928; expires 1945) and 1,871,136 (Aug. 9, 1932; expires 1949) under license of the Wisconsin Alumni Research Foundation.

McKesson's Halibut Liver Oil with Viosterol (A. R. P. I. Process) In Oil, Soluble Gelatin Capsules, 3 minims: Each capsule contains 3 minims of halibut liver oil with viosterol (A. R. P. I. Process) in oil, which supplies 8,500 U. S. P. units of vitamin A and 1,700 U. S. P. units of vitamin D.

McKesson's halibut liver oil with viosterol (A. R. P. I. Process) in oil is prepared by combining halibut liver oil with viosterol in oil (A. R. P. I. Process) (ergosterol activated by low velocity electrons in oil) in such proportions that the finished product will have not less than the potency of halibut liver oil with viosterol-N. N. R.

PURIFIED SOLUTION OF LIVER, U. S. P.-SMITH-DORSEY CO.—A sterile clear, dark brown aqueous solution containing all the fraction G (Cohn) of the liver extract, preserved with 0.5 per cent phenol. The daily parenteral administration of 0.1 cc. has been found to produce the standard reticulocyte response defined as 1 U. S. P. unit (injectable) when assayed in cases of pernicious anemia as required by the Council.

Actions and Uses.—Purified solution of liver, U. S. P. (Smith-Dorsey) is recommended for intramuscular injection in the treatment of pernicious anemia. See general article Liver and Stomach Preparations (New and Nonofficial Remedies, 1941, p. 328).

Dosage.—For the average case in relapse, the daily intramuscular injection of 0.5 cc. (5 U. S. P. injectable units) is recommended. In more severe cases this may be increased to from 2 to 4 cc. (20 to 40 U. S. P. injectable units). It is usually desirable to give at least 2 cc. (20 U. S. P. injectable units) on the first and second days. In the case of individuals who are to receive larger doses, it may be advisable to divide the dose and inject one half into each gluteal region. After an interval of seven days, the administration of 1 cc. (10 U. S. P. injectable units) doses may be made at weekly intervals. The maintenance dose will vary with the individual patient, depending on the degree of complication, but should not be less than 0.1 cc. (1 U. S. P. injectable unit) daily or an equivalent cumulative dose.

Distributed by the Smith-Dorsey Company, Lincoln, Neb.

Ampoules Purified Solution of Liver, U. S. P. (Smith-Dorsey), 1 cc. (10 U. S. P. Injectable Units per cc.).

Vials Purified Solution of Liver U. S. P. (Smith-Dorsey), 10 cc. (10 U. S. P. Injectable Units per cc.).

Vials Purified Solution of Liver U. S. P. (Smith-Dorsey), 30 cc. (10 U. S. P. Injectable Units per cc.).

Purified solution of liver U. S. P.-Smith-Dorsey Company, in bulk as purchased is passed through a Berkefeld filter into a sterile container; sterility of the solution is then determined. It is then injected intracutaneously in rabbits to determine whether necrosis will result and subcutaneously in guinea pigs in order to see whether the solution will produce edema. When the solution is passed as satisfactory it is filled under aseptic conditions into sterile ampoules or vials. Representative samples are taken on which sterility tests are conducted. The procedures used in making these tests are those recommended by the United States Public Health Service. Any lot of ampoules or vials which fails to pass this test is reprocessed before a second test. If any fail to pass again the material is discarded.

THIAMINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1941, p. 551).

The following additional dosage forms have been accepted:

Tablets Thiamine Hydrochloride-Upjohn, 0.3 mg.: Each tablet contains 0.3 mg. of thiamine hydrochloride, equivalent to 100 U. S. P. units.
Prepared by The Upjohn Company, Kalamazoo, Mich.

Tablets Thiamine Hydrochloride-Upjohn, 1 mg.: Each tablet contains 1 mg. of thiamine hydrochloride, equivalent to 333 U. S. P. units.
Prepared by The Upjohn Company, Kalamazoo, Mich.

Tablets Thiamine Hydrochloride-Upjohn, 3 mg.: Each tablet contains 3 mg. of thiamine hydrochloride, equivalent to 1,000 U. S. P. units.
Prepared by The Upjohn Company, Kalamazoo, Mich.

Tablets Thiamine Hydrochloride-Upjohn, 5 mg.: Each tablet contains 5 mg. of thiamine hydrochloride, equivalent to 1,667 U. S. P. units.
Prepared by The Upjohn Company, Kalamazoo, Mich.

Solution Thiamine Hydrochloride-Upjohn, 5 mg. per cc., 1 cc. ampoules: Each cubic centimeter contains 5 mg. of thiamine hydrochloride, equivalent to 1,667 U. S. P. units, and 5 mg. of chlorobutanol in sterile distilled water.
Prepared by The Upjohn Company, Kalamazoo, Mich.

Solution Thiamine Hydrochloride-Upjohn, 10 mg. per cc., 1 cc. ampoules: Each cubic centimeter contains 10 mg. of thiamine hydrochloride, equivalent to 3,333 U. S. P. units, and 5 mg. of chlorobutanol in sterile distilled water.
Prepared by The Upjohn Company, Kalamazoo, Mich.

Solution Thiamine Hydrochloride-Upjohn, 10 mg., 10 cc. vials: Each cubic centimeter contains 10 mg. of thiamine hydrochloride, equivalent to 3,333 U. S. P. units, and 5 mg. of chlorobutanol in sterile distilled water.
Prepared by The Upjohn Company, Kalamazoo, Mich.

Solution Thiamine Hydrochloride-Upjohn, 10 mg. per cc., 20 cc. vials: Each cubic centimeter contains 10 mg. of thiamine hydrochloride, equivalent to 3,333 U. S. P. units, and 5 mg. of chlorobutanol in sterile distilled water.
Prepared by The Upjohn Company, Kalamazoo, Mich.

Solution Thiamine Hydrochloride-Upjohn, 50 mg. per cc., 5 cc. vials: Each cubic centimeter contains 50 mg. of thiamine hydrochloride, equivalent to 16,667 U. S. P. units, and 5 mg. of chlorobutanol in sterile distilled water.
Prepared by The Upjohn Company, Kalamazoo, Mich.

Thiamine Hydrochloride Tablets-Schieffelin, 0.166 mg.: Each tablet contains 0.166 mg. of thiamine hydrochloride, equivalent to 55 U. S. P. units.
Prepared by Schieffelin & Co., New York.

Thiamine Hydrochloride Tablets-Schieffelin, 1.0 mg.: Each tablet contains 1 mg. of thiamine hydrochloride, equivalent to 333 U. S. P. units.
Prepared by Schieffelin & Co., New York.

Thiamine Hydrochloride Tablets-Schieffelin, 3.3 mg.: Each tablet contains 3.3 mg. of thiamine hydrochloride, equivalent to 1,100 U. S. P. units.
Prepared by Schieffelin & Co., New York.

Thiamine Hydrochloride Tablets-Schieffelin, 5.0 mg.: Each tablet contains 5 mg. of thiamine hydrochloride, equivalent to 1,667 U. S. P. units.
Prepared by Schieffelin & Co., New York.

Ampoules Solution Thiamine Hydrochloride 1 mg., 1 cc.: Each cubic centimeter contains 1 mg. of thiamine hydrochloride, equivalent to 333 U. S. P. units, in sterile 0.85% sodium chloride solution.
Prepared by John Wyeth & Brother, Inc., Philadelphia.

Ampoules Solution Thiamine Hydrochloride, 10 mg., 1 cc.: Each cubic centimeter contains 10 mg. of thiamine hydrochloride, equivalent to 3,333 U. S. P. units in sterile distilled water.
Prepared by John Wyeth & Brother, Inc., Philadelphia.

Ampoules Solution Thiamine Hydrochloride, 50 mg. per cc., in 5 cc.: Each cubic centimeter contains 50 mg. of thiamine hydrochloride, equivalent to 16,667 U. S. P. units, and 5 mg. of chlorobutanol in sterile distilled water.
Prepared by John Wyeth & Brother, Inc., Philadelphia.

Tablets Thiamine Hydrochloride, 1 mg.: Each tablet contains 1 mg. of thiamine hydrochloride, equivalent to 333 U. S. P. units.
Prepared by John Wyeth & Brother, Inc., Philadelphia.

Tablets Thiamine Hydrochloride, 3 mg.: Each tablet contains 3 mg. of thiamine hydrochloride, equivalent to 1,000 U. S. P. units.
Prepared by John Wyeth & Brother, Inc., Philadelphia.

Tablets Thiamine Hydrochloride, 5 mg.: Each tablet contains 5 mg. of thiamine hydrochloride, equivalent to 1,667 U. S. P. units.
Prepared by John Wyeth & Brother, Inc., Philadelphia.

Thiamine Hydrochloride Solution-Stearns, 25 mg. per cc., 5 cc. vials: Each cubic centimeter contains 25 mg. of thiamine hydrochloride, equivalent to 8,333 U. S. P. units and 5 mg. of chlorobutanol in sterile aqueous solution made isotonic with sodium chloride.
Prepared by Frederick Stearns & Co., Detroit.

Thiamine Hydrochloride Solution-Stearns, 50 mg. per cc., 5 cc. vials: Each cubic centimeter contains 50 mg. of thiamine hydrochloride, equivalent to 16,667 U. S. P. units, and 5 mg. of chlorobutanol in sterile aqueous solution made isotonic with sodium chloride.
Prepared by Frederick Stearns & Co., Detroit.

BARBITAL (See New and Nonofficial Remedies, 1941, p. 128).

The following dosage form has been accepted:

Barbital Tablets, 5 grains-Merrell.
Prepared by the William S. Merrell Company, Cincinnati.

DEXTROSE (See New and Nonofficial Remedies, 1941, p. 179).

Sharp & Dohme, Inc., Philadelphia.

Dextrose, U. S. P. (d-Glucose), 10 Gm., 20 cc. Ampoule (Buffered): Each ampoule contains dextrose, U. S. P., 10 Gm., in distilled water, to make 20 cc.; buffered with sodium citrate, 0.25 per cent.

Dextrose, U. S. P. (d-Glucose), 10 Gm., 20 cc. Ampoule (Unbuffered): Each ampoule contains dextrose, U. S. P., 10 Gm., in distilled water, to make 20 cc.

Dextrose, U. S. P. (d-Glucose), 25 Gm., 50 cc. Double-end Vial (Unbuffered): Each vial contains dextrose, U. S. P., 25 Gm., in distilled water, to make 50 cc.; accompanied by an ampoule containing 2 cc. of a buffer solution (sodium citrate, 0.125 Gm.).

Dextrose, U. S. P. (d-Glucose), 25 Gm., 50 cc. Ampoule (Unbuffered): Each ampoule contains dextrose, U. S. P., 25 Gm., in distilled water, to make 50 cc.

Dextrose, U. S. P. (d-Glucose), 50 Gm., 100 cc. Ampoule (Unbuffered): Each ampoule contains dextrose, U. S. P., 50 Gm. in distilled water, to make 100 cc.

PHENOBARBITAL (See New and Nonofficial Remedies, 1941, p. 141).

The following dosage forms have been accepted:

Phenobarbital Tablets, ¼ grain-Merrell.
Prepared by the William S. Merrell Company, Cincinnati.
Phenobarbital Tablets, ½ grain-Merrell.
Prepared by the William S. Merrell Company, Cincinnati.
Phenobarbital Tablets, 1½ grains-Merrell.
Prepared by the William S. Merrell Company, Cincinnati.

TETANUS ANTITOXIN BOVINE (See New and Nonofficial Remedies, 1941, p. 437).

The National Drug Co., Philadelphia.

Tetanus Antitoxin (Bovine) Refined and Concentrated.—An antitoxin derived from the blood serum of cattle immunized against the toxin of Clostridium tetani. As a preservative, 0.4 per cent tricresol is added. Marketed in packages of one ampul-vial containing 1,500 units and in packages of one ampul-vial containing 20,000 units. An ampul-vial of a 1:10 dilution of antitoxin is included with each package for sensitivity tests.

SULFATHIAZOLE (See New and Nonofficial Remedies, 1941, p. 514).

The following dosage forms have been accepted:

Tablets Sulfathiazole-Sharp & Dohme, 0.25 Gm. (3.85 grains).
Prepared by Sharp & Dohme, Inc., Philadelphia.
Tablets Sulfathiazole-Wyeth, 0.5 Gm. (7.7 grains).
Prepared by John Wyeth & Brother, Inc., Philadelphia.

ASCORBIC ACID (See New and Nonofficial Remedies, 1941, p. 557).

The following additional dosage forms have been accepted:

I. V. C. Ascorbic Acid Tablets, 50 mg.
Prepared by the International Vitamin Corporation, New York.
I. V. C. Ascorbic Acid Tablets, 100 mg.
Prepared by the International Vitamin Corporation, New York.

PROCAINE HYDROCHLORIDE-ABBOTT (See New and Nonofficial Remedies, 1941, p. 83).

The following dosage form has been accepted:

Procaine Hydrochloride Solution, 1%, 100 cc. Bottle: Each cubic centimeter contains procaine hydrochloride 0.01 Gm., sodium chloride 0.006 Gm., sodium bisulfate 0.001 Gm. and distilled water to make 1 cc.

NICOTINIC ACID AMIDE (See New and Nonofficial Remedies, 1941, p. 556).

The following dosage form has been accepted:

Tablets Nicotinic Acid Amide, 50 mg.-Merrell.
Prepared by The William S. Merrell Company, Cincinnati.

SODIUM THIOSULFATE (See New and Nonofficial Remedies, 1941, p. 503).

The following dosage form is accepted:

Ampule Solution Sodium Thiosulfate, 15½ grains, 10 cc.-Merrell.
Prepared by The William S. Merrell Company, Cincinnati.

RIBOFLAVIN (See New and Nonofficial Remedies, 1941, p. 553).

The following dosage form has been accepted:

Tablets Riboflavin-Merrell, 1 mg.
Prepared by The William S. Merrell Company, Cincinnati.

AMINOPHYLLIN-LEDERLE (See New and Nonofficial Remedies, 1941, p. 584).

The following additional dosage form has been accepted:

Tablets Aminophyllin-Lederle, 0.2 Gm. (3 grains).

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 North Dearborn Street - - - Chicago, Ill.

Cable Address - - - - "Medic, Chicago"

Subscription price - - - - - Eight dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, OCTOBER 11, 1941

WEIL'S DISEASE

In 1886 Weil described an acute febrile hepatorenal syndrome characterized by a sudden onset with rigor, fever, muscular pain, prostration, jaundice, hemorrhagic tendency and renal failure. In 1916 Inada and Ido reported the discovery of the causative agent, a spirochete. Noguchi classified this organism as Leptospira icterohemorrhagiae. The common vector of this spirochete is the wild rat. These animals carry the organism in the tubules of the kidney and excrete them in the urine, thus infesting water, soil or food with which they come in contact. Most of the cases reported had been in persons exposed to direct contact with the excretions of rats and in cutters and cleaners of fish, sewer workers, miners who work in wet mines, and ditch and tunnel diggers. The disease was found to be not at all rare in England, France and Germany and was particularly frequent in Japan, Denmark, Austria, Egypt and some parts of South America. More recently it has been recognized as a compensable industrial disease in fish workers in England and in New York State.

In 1935 Jehgers [1] reviewed the American literature on Weil's disease and found only 11 cases, to which he added 1 of his own. In 1937 Packchanian was able to find 32 proved cases, 14 of which were his own. The total reported to date, according to Ashe and his co-workers,[2] amounts to only 67 cases. Since the American rats have been found to harbor Leptospira icterohemorrhagiae with about the same frequency (10 per cent) as rats all over the world, and since the same occupations which expose men to excretions of rats are common occupations with us, one would expect a much greater incidence. Jehgers is inclined to believe that the paucity of cases reported in the United States is due to the fact that the clinical picture and the proper laboratory methods are not generally known. Indeed a similar opinion has been voiced editorially by The Journal.[3]

As pointed out in the reviews by Jehgers and by Ashe, Pratt-Thomas and Kumpe, recognition of the disease is facilitated by the appreciation of its three characteristic stages. The first, febrile or septicemic stage is characterized by the presence of the spirochetes in the peripheral blood, lack of antibodies and absence of the spirochetes in the urine. Conjunctivitis is a pronounced and characteristic symptom. There is a leukocytosis of from 14 to 20 thousand. The temperature falls abruptly to nearly normal on the fifth or sixth day, and jaundice becomes manifest. The second, or toxic, stage is characterized by the disappearance of the spirochetes in the blood, development of antibodies and excretion of spirochetes in the urine. Signs of renal failure and of a hemorrhagic tendency become manifest. The patient appears extremely toxic and is semicomatose. The liver is enlarged, the spleen is not palpable. In the nonfatal cases at about the end of the second week the jaundice begins to subside, there is diuresis and a fall occurs in the blood urea nitrogen. The temperature may become normal. At this time two complications may arise: iridocyclitis, which may lead to blindness, or optic neuritis, which is less serious. Specific antibodies begin to appear about the fourteenth day. By the end of the third week high agglutinins and lysin titers are demonstrable. By the end of the third week the titer is frequently over 1:10,000. Agglutination in a dilution of 1:300 is considered diagnostic of Weil's disease. This reaction is highly specific. The third or convalescent stage is characterized by the disappearance of spirochetes from the blood, their abundant excretion in the urine and complete development of antibodies in the blood. Relapses after recovery occur in from 25 to 40 per cent of the cases but are not serious. Meningitis may occur as a complication or in pure form as an entity per se, a meningitis leptospirosa. The most severe complication, which may go undiagnosed until late in the disease, is leptospiral vegetative endocarditis. From the diagnostic point of view it is important to remember that at least 50 per cent of the patients do not exhibit jaundice and that from 10 to 20 per cent have the disease to so mild a degree that they are hardly forced to bed.

The diagnosis of icterohemorrhagic spirochetosis rests on the characteristic clinical picture and on certain laboratory tests, among which darkfield examination of centrifuged blood during the first stage and of the urine after the tenth day are most important. The biologic test consists of injecting from 3 to 5 cc. of blood and of 5 cc. of cerebrospinal fluid or the sediment from 40 to 60 cc. of freshly voided urine suspended

1. Jeghers, Harold J.; Houghton, John D., and Foley, John A.: Weil's Disease: Report of a Case with Postmortem Observations and Review of Recent Literature, Arch. Path. **20**: 447 (Sept.) 1935.

2. Ashe, W. F.; Pratt-Thomas, H. R., and Kumpe, C. W.: Weil's Disease: A Complete Review of American Literature and an Abstract of the World Literature, Medicine **20**: 145 (May) 1941.

3. Spirochetal Jaundice in Sewer Workers, editorial. J. A. M. A. **103**: 493 (Aug. 18) 1934; Spirochetal Jaundice, ibid. **109**: 1128 (Oct. 2) 1937.

in 5 cc. of physiologic solution of sodium chloride into the peritoneal cavity of a guinea pig. The diagnosis can also be made from blood cultures. The highly specific agglutination reaction becomes positive after the sixth to the eighth day of the disease. The specific arsenicals such as arsphenamine and neoarsphenamine were found to be ineffective in the treatment of this spirochetal condition. The best results were obtained with the early use of large doses of specific immune serum. Such serums have been prepared in Japan and Europe but are not as yet available in this country. Equally good results, however, were obtained with the use of convalescent serum from patients recovered from the disease in whom high agglutination and lytic titer are known to have developed. Mortality rates have been variably reported from 5 to 40 per cent, or probably 30 per cent in cases with jaundice. Prognosis is most favorable in cases without jaundice.

SCIENCE, A PRIZE CONTEST AND GARLIC

The Van Patten Pharmaceutical Company of Chicago is at present circularizing the medical profession with advertising for "Allimin" including a list of papers on vascular hypertension published in recognized American medical journals during the first six months of 1941 and a voting card for entering the number of the paper selected. These votes are to be counted and the author of the paper receiving the highest number of votes is to receive $1,000. There are second, third and fourth prizes of $250, $100 and $50 respectively and ten honorable mention awards of $10 each. The purpose of the awards, according to the concern, is "to encourage a wide professional interest in the subject of High Blood Pressure and its more effective treatment." The firm claims that the winners will be "announced in November 1941 issues of Medical Journals and direct by mail to all physicians in the United States." The following paragraph appears in the original offer:

> Prize money will be paid by the Van Patten Pharmaceutical Co. distributors of ALLIMIN Garlic-Parsley Tablets for the reduction of High Blood-Pressure and the relief of associated symptoms. However, it is emphasized that this offer is not made for the purpose of promoting the use of ALLIMIN but for the purpose of stimulating interest of the profession in the subject of Vascular Hypertension and its relief.

Numerous inquiries have been received by the American Medical Association concerning this preparation. An abstract of a Notice of Judgment issued by the Food and Drug Administration against Allimin in March 1936 was included in the reports of the Bureau of Investigation under the heading "Misbranded 'Patent Medicines'" in THE JOURNAL, Sept. 25, 1937. This notice stated that Allimin "was alleged to be misbranded in that certain statements in the circulars shipped with the article falsely and fraudulently represented that it was effective in the treatment of high blood pressure," among other things. In December 1937 a second and similar Notice of Judgment was issued. In 1938 a Notice of Judgment was issued against the distributors, charging that they falsely and fraudulently represented that Allimin was effective as a treatment, remedy and cure for high blood pressure. In this case the court imposed a fine of $75 and costs.

The list of papers in the prize contest, alphabetically arranged, is said to have been compiled from the *Quarterly Cumulative Index Medicus*, volume 29, January to June 1941. The firm states that if any paper has been overlooked it can be voted for even though it does not appear on the list. There are one hundred and two papers to be voted on. Few, if any, physicians will have read these papers; for the purpose of favoring the concern with a vote, it would be necessary to review them all.

The titles given do not in any instance include the words garlic or garlic-parsley. The advertising, however, contains reference to some 1921 papers by Loeper and Debray in Paris, who are said to have found that garlic, even in small doses, lowers blood pressure, especially of patients with hypertension. The statement is added "A voluminous foreign literature supports their findings." Why, then, refer to a 1921 report? The advertising continues:

> In America, garlic has but recently gained prominence in the treatment of hypertension. In 1938 there appeared a report (Medical Record 148:381, 1938) of a series of twenty-six patients treated with ALLIMIN Concentrated Garlic-Parsley Tablets. It was found that this treatment produced a substantial reduction of both systolic and diastolic pressure, together with marked or complete relief from hypertensive headaches and dizziness. It might be added that clinical research on a larger scale now in progress tends to confirm and extend these findings.

Recent scientific reports, however, do not refer to the use of garlic for this purpose.

The advertising states that Allimin is a tablet containing 4.75 grains of concentrated garlic and 2.37 grains of concentrated parsley with excipients and coating. Parsley is added, according to the manufacturers, because its active constituent, apiol, "is believed to exert a synergistic action with garlic in lowering high blood pressure." The final paragraph constitutes the question "Does use of Allimin present any disadvantages?" Answer: "Yes—one that we know of. It has to do with the matter of odor." No doubt,—and another is the lack of any real evidence that it has any value other than its psychologic effect.

The attempt to acquire a cloak of respectability for the promotion of a preparation the use of which is not adequately supported in scientific literature, by making an award to authors of scientific publications, seems a peculiarly devious and probably inefficient technic.

THE CONTROL OF RESPIRATORY INFECTIONS

Recognition of the manner in which contagion is transmitted has been an essential, often the decisive, step in gaining control over epidemic and pestilence. The control over epidemic intestinal diseases, which is recognized as a conspicuous success of the bacteriologic era, followed naturally on recognition of these diseases as water and food borne and of corollary measures directed toward sanitation of water, milk and food supplies. Recognition of the insect vectors of yellow fever, plague and typhus fevers has afforded a basis for control measures directed against these diseases. Much of the present confusion and dread regarding poliomyelitis is attributable to the fact that the means of communication for that disease have not been established.

The respiratory diseases offer striking contrast to water borne, milk borne and insect borne diseases with regard to the possibility of their control. Public health measures such as quarantine directed against respiratory diseases have been lacking in success. In retrospect, failures and pessimism regarding control of respiratory diseases is, in part at least, due to lack of recognition of the major vehicle of respiratory contagion, the air itself.

A symposium on Air Borne Infection and Means for Its Control, given under the joint auspices of the Section on Medical Sciences of the American Association for the Advancement of Science and the Committee on Aerobiology of the National Research Council as one of the fiftieth anniversary symposiums of the University of Chicago, brought from many sources cogent evidence that the air of enclosed spaces is the principal means of spread of respiratory contagion. W. F. and Mildred W. Wells proposed in 1933 that the invisible infective residues of droplets sneezed, coughed and spoken into the air were a more effective means of respiratory infection than the coarse, visible Flügge droplets which were currently incriminated. Eight years of development of this theory by the Wellses culminated in the report to this symposium that they have checked the epidemic spread of mumps, chickenpox and measles; checking of these maladies was achieved by ultraviolet irradiation of the primary grades of three schools in the Philadelphia area; other unirradiated departments of the same schools simultaneously suffered these diseases in epidemic form.

Dr. Deryl Hart reported dramatic reduction of postoperative infections by ultraviolet irradiation of air of the operating room and the operative field. Drs. E. C. Robertson and M. E. Doyle of Toronto reported significant reduction of cross infection in a children's hospital by application of ultraviolet irradiation. Drs. Barenberg, Greene, Greenspan and Greenberg reported similar success in stopping the spread of infection in a foundling institution by radiant disinfection of the air, and Dr. Iwan Rosenstern of the Cradle in Evanston was successful in protecting infants both by ultraviolet and by mechanical barriers.

Prof. M. W. Jennison dramatized the atomizing of potentially infective mouth and nose secretions into the air by still and moving pictures taken with stroboscopic light. The speaking of "moist" consonants, such as f, p and s, was shown to project droplets into the air by the hundred, coughs by the thousand, and sturdy, uninhibited male sneezes sprayed droplets by the tens of thousands.

Another dramatic means of disinfection of the air was reported by Prof. O. H. Robertson of the University of Chicago, who showed that highly dilute vapor of propylene glycol, a chemical relative of glycerin, was able almost instantly to kill pathogenic bacteria in the air; influenza virus was similarly inactivated by propylene glycol vapor.

The papers presented will be published as a symposium monograph of the American Association for the Advancement of Science. The ravages of respiratory disease among trainees, the armed forces and the civilian population in the last war emphasize the importance of considering and testing every promising means of control of respiratory disease in this war. Ultraviolet irradiation and germicidal vapors have each been shown to be promising in this respect. Large scale practical tests should be undertaken promptly to establish their relative value for protecting those in training and in the service of our armed forces.

Current Comment

NEEDS OF ARMY MEDICAL LIBRARY STILL PRESSING

Although the President has signed the bill providing for a new building for the Army Medical Library and Museum, which passed both the Senate and the House of Representatives, the Congress has not yet appropriated any money for the project except $130,000 for plans and drawings. The estimates have, however, been made in full amount for the library, the museum and the land; these items are included in the War Department estimate for military appropriations needed next year. Thus approval is still required from the Budget, by the members of the committees which pass on the Budget and by Congress itself. Now that there is a national emergency, attempts may be made to postpone positive action on this appropriation. Some time ago the Park Planning Commission and the Fine Arts Commission of the District of Columbia approved designs, blueprints and drawings for the building. It was hoped that Congress would provide the money in a supplemental bill. Had the Congress acted, at least six months would have been saved in erecting the buildings. Never was there a more pressing need

than immediate action on this project. Thousands of volumes which should be available through the Army Medical Library must now be stored in the national archives. Tons of other material are packed and become unavailable simply because suitable space is lacking and because there is no way to use the material in the quarters now occupied. The Army Medical Museum is battling even a worse suituation. The fire hazard which constantly threatens these irreplaceable documents and specimens should in itself be sufficient to cause immediate positive action by the Congress.

CONVALESCENT SERUM FOR POLIOMYELITIS

For a six week period in the early fall of 1937 an epidemic of poliomyelitis prevailed in Toronto. Silverthorne and his colleagues [1] report that 45 patients were given 50 cc. of convalescent serum intramuscularly and 47 did not receive any serum. Comparison of the two groups showed a slight but probably not significant difference in those severely paralyzed; i. e., 2.2 per cent in those given serum compared with 8.5 per cent in the controlled group. Little difference was seen in those cases in which paralysis was considered as moderate: 13.3 per cent in those given serum and 17 per cent in the controlled group. No difference could be determined between those suffering any form of paralysis: 31.1 per cent in those receiving serum and 31.9 per cent in the controlled group. The results of this controlled study indicate that serum in the dosages given was without value in preventing paralysis in poliomyelitis in the 1937 Toronto epidemic. Advocates of the use of convalescent serum assert frequently that the dosages cited are inadequate and otherwise inefficient. Nevertheless, gradually mounting scientific opinion in now definitely opposed to the belief that the procedure has any real specific merit.

PROPAGANDA ANALYSIS

Latest in the series of pamphlets issued by the Institute for Propaganda Analysis, Inc., is an item headed "Health and the Doctors." The Institute for Propaganda Analysis is a nonprofit corporation "organized to assist the public in detecting and analyzing propaganda, but it is forbidden to engage in propaganda or otherwise attempt to influence legislation." In the preparation of the document here concerned, an original draft was prepared and submitted to a considerable number of persons known for their participation in the battle of "socialized medicine" that has been somewhat intense since 1932. No doubt, a competent psychologist could read this document and evaluate the extent to which those who prepared it were swayed in their own points of view by the persons consulted and by previous bias that they may have had in behalf of one or the other aspect of the situation. The document certainly comes far from being adequate in its presentation of the point of view of either the proponents or opponents of "state medicine." The most valuable paragraph in the entire document is the concluding one, which we quote:

> The role of propaganda in this situation is a double one. It can serve the groups on both sides of the controversy. So long as there is a free play of propaganda and neither side is able to shut the other off by artificial devices the struggle will only affect the rate of change. The fundamental interests of the population will determine how far the change goes, and where.

With this point of view there can be no argument. Fortunately for the American people the attempts of those who have wished to revolutionize medical practice since 1932 have failed. For some time there has been gradual evolution in the introduction of new forms of payment for medical service. Such forms are now numerous, varied and interesting as experiments. With the technic of scientific experimentation to determine the actual values before general adoption, the medical profession is in accord.

"ALAS, POOR YORICK! I KNEW HIM, HORATIO"

On September 22 Mrs. John R. Brinkley was arrested in Kansas City on a fugitive warrant based on a Little Rock, Ark., charge of using the mails to defraud. A similar warrant for "Dr." John R. Brinkley was also carried by the deputy United States marshal, but the physician in attendance on "Dr." Brinkley said that his condition would not permit the warrant to be served. A telegram had been received from the district attorney at Little Rock, Ark., requesting the arrest of the Brinkleys on charges of sending fraudulent promotional materials through the mails. The physician of "Dr." Brinkley requested a delay because the leg of "Dr." Brinkley had been amputated in the Research Hospital in Kansas City on August 23 and it was reported that he "suffered a severe heart attack September 2." It is reported that Mrs. Brinkley stated the bond would be made returnable in Little Rock, where an answer would be made to the fraud charges. Incidentally, it was stated in the complaint that "Dr. Brinkley had treated some 16,000 persons at a fee of $750 each or a total of $12,000,000" and that the Brinkleys had represented "to certain persons and to others generally" that "Dr." Brinkley "had found a substance which would restore to normal sex vigor weak men and women" and that this and other claims alleged to have been made for the treatment "were false and fraudulent and the United States mails were used to promote this fraud." Another principal charge in the indictment was that the defendants "did falsely pretend that John R. Brinkley was a great surgeon, scientist, and physician, that he, while visiting medical centers in Europe, had found a real substance which when properly administered would restore to normal sexual vigor sexually weak men and women." The Brinkley hospitals at Little Rock have been closed, and several months ago "Dr. Brinkley filed a voluntary petition in bankruptcy in San Antonio, Texas.

1 Silverthorne, Nelles; Hawke, W. A., and Brown, Alan: Convalescent Serum in the Treatment of Poliomyelitis, Canad. Pub. Health J. 32: 410 (Aug.) 1941.

MEDICAL PREPAREDNESS

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medical preparedness, and such other information and announcements as will be useful to the medical profession.

HEALTH OF ARMY BETTER THAN IN FIRST WORLD WAR

America's new army is in better physical shape than the forces of 1917-1918, according to the statisticians of the Metropolitan Life Insurance Company. Admissions to sick report are now running well under those of the first world war, and the annual death rate from disease has been under 1 per thousand, or less than one-tenth the rate for the army in the corresponding period of 1917-1918. The mortality in the new army is actually lower than that now prevailing at comparable ages in the general population of the country.

There are several diseases in which extraordinary improvement has been recorded. In the fall of 1917-1918 some camps were swept by epidemics of measles, mumps and infections of the upper respiratory tract, while there were local outbreaks of epidemic meningitis. The annual incidence of measles reached a peak rate of nearly 240 per thousand in November 1917, and the death rate for that month from this disease was 5 per thousand. In contrast, the maximum rate of the incidence of measles in the present army was 57 per thousand in March 1941 and has recently fallen to 1 per thousand. Moreover, the measles mortality in the new army is negligible, while in 1917-1918 it was a major cause of death among the soldiers.

The annual admission rate for mumps in the 1941 army is currently under 5 per thousand, and the peak rate in April was 17.7. In 1917-1918 the peak rate was over 200 per thousand in January and February 1918 and then fell to about 25. Cases of epidemic meningitis are now comparatively rare in the army. The mortality from influenza and pneumonia in the present army is low.

The relatively low rate from venereal diseases as compared with the World War period shows the feasibility of their control, and even lower rates may be achieved by close cooperation of military and public health officials and voluntary agencies, combined with the more adequate provision of recreational facilities in the areas where the new army camps are located.

The incidence of injuries and the mortality from them are major items in the health picture of the new army. This is to be expected in view of the nature of military service, the importance of mechanized equipment and the large scale maneuvers with such equipment under conditions simulating war. The incidence of admissions to sick call on account of injuries since November, the statisticians explain, has averaged 150 per thousand annually and the trend has been upward in recent months. The death rate from injuries between November 1940 and May averaged 1.3 per thousand, or above the death rate from disease. This figure, however, is lower than the rate in the regular army in the past few years and not much different from that among the recruits of 1917-1918.

COURSE IN PLASTIC SURGERY

Specialized training required by members of surgical teams in plastic and maxillofacial surgery will be given twelve members of the Medical and Dental Corps of the Army in a new course, which began October 1 at the Army Medical Center, Washington, D. C., and will continue for four weeks. Ten students are in the first class, which began September 1. Instructors for the course are selected from the Medical Department, provisional service schools—Army medical and Army dental schools—and from medical and dental officers assigned to the Walter Reed General Hospital. In addition, special lectures are presented.

ARMY HOSPITAL RATE IN AUGUST

War Department figures reveal that only eighty-seven out of every thousand men in the Army were hospitalized in August. Of this number, seventy were admitted for disease. The highest admission rate for hospitals was in the Fourth Corps Area, where maneuvers were under way. The next highest rate was in the Seventh Corps Area, where Camp Robinson, Ark., has about 40 per cent of the corps area personnel. Camp Robinson had an admission rate twice as high as any other station in that area. In general, the admission rates are low at this season of the year. The effect of maneuvers, however, is to increase admissions for minor causes. The incidence of venereal disease is low, except in the Fourth and Eighth corps areas, which include the areas of the greatest maneuver activity.

MORE ASSISTANT SURGEONS FOR THE NAVY

The Navy Department has announced that the following candidates were issued appointments as Assistant Surgeons in the Navy, with the rank of lieutenant (junior grade) to rank from July 7:

ANDREWS, William C., Chicago.
BAGENSTOSE, Clinton H., Reading, Pa.
BERRY, Albert D., Fallon, Nev.
BLOMBERG, Robert D., Minneapolis.
BRIERTON, John F., Brooklyn.
BRYSON, James G., Jr., Bastrop, Texas.
CAMPBELL, Lee D., Clear Lake, Wis.
CARTER, Curtis H., Pensacola, Fla.
COLLINGS, Robert Z., Jr., Philadelphia.
CONNERLEY, Marion L., Lafayette, R. I.
COOK, Weston C., Hallowell, Pa.
COOPER, Claude E., Chevy Chase, Md.
COWAN, John S., Detroit.
DAVIE, Eugene N., Oklahoma City.
DEEN, Robert R., Port Royal, Pa.
DOWNEY, William P., Tallapoosa, Ga.
EMERSON, Ashton, Cambridge, Mass.
ENRIGHT, William M., Barberton, Ohio.
FENDER, Asa H., Worthington, Ind.
FIELDS, James A., Sanford, Fla.
FOOTE, Robert F., Brooklyn.
FORTE, Joseph A., Jr., Philadelphia.
FRANKLIN, Roland G., Alhambra, Calif.
FREYLING, Robert A., Grand Rapids, Mich.
GATELEY, John R., Roslindale, Mass.
GLEYSTEEN, Rodney R., Alton, Iowa.
GOLDTHWAITE, Dana D., Wentworth, N. H.
HANSON, Walter N., Grand Forks, N. D.
HARDIE, Gilbert S., Chicago.
HARRIS, Thomas A., San Antonio, Texas.
HERRMANN, Lyle F., Atlanta, Ga.
HOIDALE, Porter M., San Diego, Calif.
HUNTER, Henry J., Oil City, Pa.
JARUSZEWSKI, Edward J., Chicago.
JONES, Hunt B., San Diego, Calif.
JONES, Millard F., Nashville, N. C.
JORDAN, Joseph M., High Rock, Pa.
KAESS, Karl V., Fargo, N. D.
KING, John F. W., Wilmington, Del.
KOTLEROFF, Jerome, Brooklyn.
MARSH, William C., Toledo, Ohio.
McDONALD, Eugene J., Boston.
McDONOUGH, Oscar T., Jr., Washington, Pa.
MEADOR, George E., Oklahoma City.
MORRIS, Mason, Jr., Los Angeles.
MORRISON, Andrew E., Minneapolis.
MOY, James T., Easton, Pa.
MYERS, George R., Jr., Hurlock, Md.
NIES, Richard D., Narberth, Pa.
O'CONNELL, Joseph H., New York.
POPE, William N., Edisto Island, S. C.
RINGNESS, Henry R., Washington, D. C.
RODGERS, Terry C., Little Rock, Ark.
SCHULZ, Norbert J., Marion, Ohio.
SHELLEY, Ronald N., East Syracuse, N. Y.
SHOOR, Mervyn, San Francisco.
SPEIR, Ross C., Jr., Birmingham, Ala.
STANDARD, Roger A., Richland, Wash.
STRATTON, Victor C., Los Angeles.
STREIT, Harold A., Algona, Ill.
SULLIVAN, David E., Portland, Ore.
THIEMEYER, John S., Jr., Washington, D. C.
WEBER, Walter M., San Francisco.
WHEELER, Robert W., Minneapolis.
WHIPPLE, Robert J., McConnelsville, N. Y.
YAVORSKY, William D., Belle Plains, Iowa.
ZIEGLER, Dillman F., Chicago.

DR. ELIOT APPOINTED LIAISON OFFICER FROM CHILDREN'S BUREAU

Dr. Martha M. Eliot, associate chief of the Children's Bureau, U. S. Department of Labor, Washington, has been appointed liaison officer from the Children's Bureau to assist the Office of Civilian Defense in the preparation of the child welfare aspects of the program. Miss Katharine F. Lenroot, chief of the bureau, is child welfare consultant to the Office of Health Defense and Welfare Services, and the assistant to the chief, Charles I. Schottland, is liaison officer to that office.

NEW COMMANDANT FOR SCHOOL OF AVIATION MEDICINE

Lieut. Col. Eugen G. Reinartz, M. C., post surgeon at Scott Field, Ill., has been assigned to head the School of Aviation Medicine at Randolph Field, Texas, and will be succeeded at Scott Field by Lieut. Col. Louis M. Field, M. C., post surgeon at Lawry Field, Denver.

MEDICAL TRAINING BATTALIONS

The following medical reserve officers were recently on duty with the 27th and the 28th Medical Training Battalion in the Sixth Corps Area:

27TH MEDICAL TRAINING BATTALION

BRALLIAR, John S., 1st Lieut.
CARLOCK, John H., 1st Lieut.
DREY, Norman W., Captain.
FRANK, Harold J., 1st Lieut.
HAGEN, Wayne S., Captain.
HUNTER, Martin P., 1st Lieut.
HUTH, Melvin F., 1st Lieut.
KAISER, Jerome, 1st Lieut.
KIMBALL, Merritt H., 1st Lieut.
LEVIN, Walter N., 1st Lieut.
MARX, Paul D., 1st Lieut.
OXMAN, Emanuel M., 1st Lieut.
PROCHASKA, Charles J., Captain
PYZIK, Stanley W., 1st Lieut.
ROSS, Theodore V., 1st Lieut.
WILLIAMS, Mark F., 1st Lieut.

28TH MEDICAL TRAINING BATTALION

BRAZE, Alexander, Captain.
COLLINS, Harold J., 1st Lieut.
COUGHLIN, Samuel T., 1st Lieut.
EASLEY, John H., 1st Lieut.
HENRICH, Leo C., 1st Lieut.
HIRST, Otis G., Captain.
KAPLAN, Louis G., 1st Lieut.
KLEIN, Max E., 1st Lieut.
LEWIN, Julian R., 1st Lieut.
LYDDON, Donald W., 1st Lieut.
MALOW, Louis, 1st Lieut.
ODESSKY, Louis, 1st Lieut.
STECHER, Joseph L., 1st Lieut.

ARMY RESERVE OFFICERS ORDERED TO ACTIVE DUTY

WAR DEPARTMENT

The following additional medical reserve officers have been ordered to extended active duty by the War Department, Washington, D. C.:

ADLERMAN, Edwin Jerome, 1st Lieut., New York
AMATRANO, Vincent Paul, 1st Lieut., New York.
ARONSON, Roland Sigurd, Captain, Philadelphia.
BECK, Norman Russell, 1st Lieut., Rochester, Minn.
BLACK, Harry Alexander, Jr., 1st Lieut., Aliquippa, Pa.
BURRETT, John B., 1st Lieut., New York.
CAMPBELL, George Maury, 1st Lieut., Nacogdoches, Texas.
COLBURN, Bruce Arthur, 1st Lieut., San Francisco.
DELBERT, Stewart Gerrard, 1st Lieut., Detroit.
DeMAHY, Bernard Moses, 1st Lieut., New Orleans.
GILL, Dan Cummins, 1st Lieut., Okmulgee, Okla.
HALL, Halle Orville, 1st Lieut., West Los Angeles, Calif.
KALOW, Irving, 1st Lieut., New York.
KOS, Clair Michael, 1st Lieut., Boston.
LEARY, William Vincent, 1st Lieut., Rochester, Minn.
LERCH, Theodore Trowbridge, 1st Lieut., Oakland, Calif.
LOURDEAUX, Stanley Joseph, 1st Lieut., San Francisco.
NEFF, Richard Scudder, 1st Lieut., Boston.
NICKEL, Walter Russell, 1st Lieut., Rochester, Minn.
PENCHANSKY, S. J., 1st Lieut., Bayonne, N. J.
POTTER, Thompson Eldridge, 1st Lieut., New York.
SWARTZ, Morris, 1st Lieut., Dorchester, Mass.
WALKER, John Hunt, 1st Lieut., Tacoma, Wash.
WEIN, Arthur Benjamin, 1st Lieut., Waterville, Maine.
WELLS, Benjamin B., 1st Lieut., Rochester, Minn.
WILLIAMS, Nathan, 1st Lieut., Allston, Mass.

FIRST CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, First Corps Area, which comprises the states of Maine, Vermont, New Hampshire, Rhode Island, Massachusetts and Connecticut:

ALBOM, Jack J., 1st Lieut., New Haven, Conn., Fort Devens, Mass.
BELMONT, Ralph S., 1st Lieut., Sanford, Maine, Fort Williams, Maine.
CURTIS, Sprague, 1st Lieut., Westfield, Mass., Fort Adams, R. I.
DENNIS, Richard H., 1st Lieut., West Roxbury, Mass, Camp Lee, Va.
GLENDY, Robert E., Captain, Newton, Mass., Fort Banks, Mass.
HALL, Walter L. H., 1st Lieut., Orono, Maine, Army Air Base, Bangor, Maine.
HOPPER, Edward B., 1st Lieut., Glenbrook, Conn., Camp Edwards, Mass.
KEES, Philip A., Captain, Longmeadow, Mass., Westover Field, Chicopee Falls, Mass.
LOVE, Robert B., Major, Gorham, Maine, Fort Williams, Maine.
MEYERS, Royal A., 1st Lieut., Watertown, Conn., Army Air Base, Manchester, N. H.
STELLAR, Stanley, 1st Lieut., Brighton, Mass., Fort Devens, Mass.

Orders Revoked

BLACKWELL, Claude C., 1st Lieut., Boston.
LEVIN, Aaron H., 1st Lieut., Brookline, Mass.

SECOND CORPS AREA

The following additional medical reserve corps officers have been ordered to active duty by the Commanding General, Second Corps Area, which comprises the states of New York, New Jersey and Delaware:

ABELOW, Irving, 1st Lieut., New York, Fort Knox, Ky.
ALPERT, Harry L., 1st Lieut., Harrisville, N. Y., Fort Bragg, N. C.
BROMBERG, Jules H., 1st Lieut., Newark, N. J., Fort Wadsworth, N. Y.
CLARKE, Elisha Y., 1st Lieut., Glens Falls, N. Y., Fort Monmouth, N. J.
COHLAN, Sidney Q., 1st Lieut., Brooklyn, Camp Polk, La.
DMYTRIW, Stephen, 1st Lieut., Newark, N. J., Camp Davis, N. C.
FRIEDMAN, Ralph, 1st Lieut., Freeport, L. I., N. Y., Fort Knox, Ky.
FRIENDENTHAL, Meyer, 1st Lieut., New York, Fort Knox, Ky.
GELLER, Hyman, 1st Lieut., Hempstead, L. I., N. Y., Fort Knox, Ky.
HERRINGTON, Lee R., 1st Lieut., Westfield, N. J., Camp Shelby, Miss.
HILLYER, Robert A., 1st Lieut., Brooklyn, Fort Knox, Ky.
KUFLIK, William Eggert, 1st Lieut., Brooklyn, Fort Knox, Ky.
LANGSAM, Sanford M., 1st Lieut., Far Rockaway, L. I., N. Y., Fort Knox, Ky.
LEWOWITZ, Jerome H., 1st Lieut., New York, Fort Knox, Ky.
LIPPMAN, Eli M., 1st Lieut., Brooklyn, Fort Knox, Ky.
O'CONNOR, John D., 1st Lieut., Lackawanna, N. Y., Fort Totten, N. Y.
RE, Maurice J., 1st Lieut., Brooklyn, Camp Polk, La.
REED, Harry G., 1st Lieut., Binghamton, N. Y., Fort Totten, N. Y.
SARNO, Anthony M., 1st Lieut., Newark, N. J., Fort Knox, Ky.
SMITH, Thomas W., 1st Lieut., Springfield Center, N. Y., Fort Hancock, N. J.
TARLOWSKI, Carl F., Captain, Trenton, N. J., Fort Knox, Ky.
WEAVER, William J., Jr., 1st Lieut., Delmar, N. Y., Fort Knox, Ky.
WERNER, William, 1st Lieut., New York, Fort Knox, Ky.
WILL, George J., 1st Lieut., Dobbs Ferry, N. Y., Fort Knox, Ky.

THIRD CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, Third Corps Area, which comprises the states of Pennsylvania, Virginia, District of Columbia and Maryland:

BLUMENTHAL, Leonard Eliot, 1st Lieut., Baltimore, Camp Lee, Va.
COHEN, Irwin Justus, 1st Lieut., Danville, Pa., Camp Lee, Va.
ENGLE, Rowland Burton, 1st Lieut., Philadelphia, Camp Lee, Va.
EVANS, Harold Hicks, 1st Lieut., Berwick, Pa., Indiantown Gap Military Reservation, Pa.
FABIAN, Ralph George, Captain, Pittsburgh, Camp Lee, Va.
FRICK, Willis Gilbert, 1st Lieut., Norristown, Pa., Charleston, S. C.
GOFF, Herbert Kenneth 1st Lieut., Pittsburgh, Charleston, S. C.
KEEBLER, Howard Marshall, Jr., 1st Lieut., Norwood, Pa., Camp Lee, Va.
KINNEY, Harold Jennings, 1st Lieut., Ligonier, Pa., Camp Grant, Ill.

PANTALONE, Angelo Ludwig, 1st Lieut., Crabtree, Pa., Camp Lee, Va.
PROCOPIO, James Joseph, 1st Lieut., Shamokin, Pa., Camp Claiborne, La.
SION, Edward Gabriel, 1st Lieut., Shenandoah, Pa., Camp Grant, Ill.
STONE, Reuben Edwin, Captain, Glenn Dale, Md., Camp Lee, Va.
TAYLOR, Floyd Dean, 1st Lieut., Baltimore, Fort George G. Meade, Md.
WELLS, Charles Robert Edwin, 1st Lieut., New Brighton, Pa., Camp Lee, Va.

Orders Revoked

COSTELLO, Robert Francis, 1st Lieut., Washington, D. C.
FULTZ, George Simeon, Jr., 1st Lieut., Butterworth, Va.
SCHROEDER, Alfred Richard, 1st Lieut., Washington, D. C.
THOMAS, Henry William, 1st Lieut., Pittsburgh, Pa.

FOURTH CORPS AREA

The following additional medical reserve corps officers have been ordered to active duty by the Commanding General, Fourth Corps Area, which comprises the states of Tennessee, North Carolina, South Carolina, Alabama, Georgia, Mississippi, Florida and Louisiana:

ALSUP, Will Byrn, Jr., 1st Lieut., Augusta, Ga., Fort Jackson, S. C.
ANDREWS, Fred L., Major, Great Falls, Mont., Induction Station, Sacramento, Calif.
BAKER, William R., 1st Lieut., Atlanta, Ga., Fort Benning, Ga.
BARKER, Frank R., 1st Lieut., Alexandria, La., Camp Davis, N. C.
BURKHALTER, W. D., Captain, Memphis, Tenn., Fort McClellan, Ala.
CARROLL, David S., 1st Lieut., Memphis, Tenn., Camp Davis, N. C.
CHALSTROM, Harry E., Jr., 1st Lieut., New Orleans, Camp Blanding, Fla.
COOK, William Norvel, 1st Lieut., Columbia, Tenn., Fort Jackson S. C.
COSTON, Ralls M., 1st Lieut., Birmingham, Ala., Camp Blanding, Fla.
FINKELSTEIN, Wilfred, 1st Lieut., New Orleans, Fort Benning, Ga.
GORDON, Thomas G., 1st Lieut., Fosterville, Tenn., Camp Stewart, Ga.
HAGAN, James Howard, 1st Lieut., Macon, Ga., Fort Jackson, S. C.
JACKSON, James T., 1st Lieut., Montgomery, Ala., Fort Benning, Ga.
KENNEDY, John Olney, 1st Lieut., Knoxville, Tenn., Fort Jackson, S. C.
LORENZEN, Lee Hall, 1st Lieut., New Orleans, Camp Blanding, Fla.
McCONNELL, Harvey E., 1st Lieut., Chester, S. C., Fort Bragg, N. C.
MELTON, Thomas A., 1st Lieut., Birmingham, Ala., Fort McPherson, Ga.
MERRITT, James W., Jr., 1st Lieut., Miami, Fla., Fort Bragg, N. C.
MONTAGNINO, Angelo T., 1st Lieut., New Orleans, Fort Bragg, N. C.
PITT, Charles Kermit, 1st Lieut., Trinity, Ala., Fort Benning, Ga.
POLITO, Philip B., 1st Lieut., Independence, La., Camp Shelby, Miss.
POOLE, William L., 1st Lieut., Fairfield, Ala., Camp Wheeler, Ga.
RAPER, James S., 1st Lieut., Lexington, N. C., Fort Bragg, N. C.
RICH, MAURICE. 1st Lieut., Atlanta, Ga., Fort Benning, Ga.
ROBERTS, Rufus W., Jr., 1st Lieut., Birmingham, Ala., Camp Blanding, Fla.
SAFLEY, Thomas J., Jr., 1st Lieut., Drew, Miss., Fort Bragg, N. C.
SHALLOWAY, Charles Leon, 1st Lieut., Atlanta, Ga., Camp Wheeler, Ga.
SLIPAKOFF, Leon, 1st Lieut., New Iberia, La., Fort Bragg, N. C.
TOCKER, Alfred Meyer, 1st Lieut., Birmingham, Ala., Camp Blanding, Fla.
TRITICO, Joseph John, 1st Lieut., New Orleans, Camp Blanding, Fla.
WILLIAMS, Lynwood Earl, 1st Lieut., Kinston, N. C., Camp Blanding, Fla.

Orders Revoked

ATKINSON, Robert H., 1st Lieut., Water Valley, Miss.
BLACK, Irby Harry, 1st Lieut., Live Oak, Fla.
CARTER, Thomas S., Captain, Miama, Fla.
GREENBERG, Stephen A., 1st Lieut., Florence, S. C.
HANKS, James Monroe, 1st Lieut., Anderson, S. C.
HEMBREE, John A., Major, Jeffersonville, Ga.
JOYNER, Rayburn N., 1st Lieut., Marianna, Fla.
MIZELL, Von DeLaney, 1st Lieut., Fort Lauderdale, Fla.
MUELLER, Camillo F., Captain, New Orleans.
PORTER, Arthur R., Jr., 1st Lieut., Memphis, Tenn.
ROBERTS, Louis C., Captain, Durham, N. C.
ROBSON, Frank Y., 1st Lieut., Tampa, Fla.
ROPER, C. James, 1st Lieut., Jasper, Ga.
TERRENCE, August C., 1st Lieut., Opelousas, La.
WELLS, James Ralston, Major, Daytona Beach, Fla.
WILKINS, William B., 1st Lieut., West Palm Beach, Fla.
WILSON, James A., 1st Lieut., New Orleans.

Relieved from Duty

BURG, Fred A., 1st Lieut., Camp San Luis Obispo, Calif.

SIXTH CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, Sixth Corps Area, which comprises the states of Wisconsin, Michigan and Illinois:

BAUER, Edward George, 1st Lieut., Pontiac, Mich., 30th Division, Fort Jackson, N. C.
BEATTY, Jackson D., 1st Lieut., Morris, Ill., Headquarters and Station Complement, Corps Area Service Command.
BORKON, Eli L., 1st Lieut., Carbondale, Ill., Headquarters and Station Complement, Corps Area Service Command, Camp Davis, N. C.
BROWN, Francis J., 1st Lieut., Decatur, Ill., Headquarters and Station Complement, Corps Area Service Command, Camp Davis, N. C.
DE WEERD, James Henry, 1st Lieut., Chicago, U. S. Army Recruiting Station, 610 S. State Street, Chicago.
FARINACCI, Maurice G., 1st Lieut., Chicago, 1605th Corps Area Service Unit, Fort Custer, Mich.
HAYES, John M., Lieut., Col., Decatur, Ill., Headquarters and Station Complement, Corps Area Service Command, Camp Forrest, Tenn.
HEIMOVITZ, Jack Sanders, 1st Lieut., Chicago, Headquarters and Station Complement, Corps Area Service Unit, Camp Stewart, Ga.
JOHNSON, Lowell Ralph, 1st Lieut., Danville, Ill., 33d Division, Camp Forrest, Tenn.
LEBOW, Erwin Edward, 1st Lieut., Milwaukee, 202d Coast Artillery (A. A.), Fort Bliss, Texas.
LOEFFLER, Robert William, 1st Lieut., Berwyn, Ill., 3d Armored Division, Camp Polk, La.
McEWEN, Kenneth W., 1st Lieut., Forest Park, Ill., Headquarters and Station Complement Corps Area Service Command, Camp Shelby, Miss.
MERGENER, John Charles, 1st Lieut., Chicago, Headquarters and Station Complement, Corps Area Service Command, Camp Davis, N. C.
ROSENBERGER, Maurice D., 1st Lieut., Oak Park, Ill., 1,605th Corps Area Service Unit, Fort Custer, Mich.

Orders Revoked

MANNING, Morey, 1st Lieut., Detroit, Mich., 1,609th Corps Area Service Unit, Recruiting Center, Fort Custer, Mich.
NORRIS, Harold V., 1st Lieut., Jacksonville, Ill., 33d Division, Camp Forrest, Tenn.

SEVENTH CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, Seventh Corps Area, which comprises the states of North Dakota, South Dakota, Minnesota, Nebraska, Iowa, Kansas, Missouri, Arkansas and Wyoming:

FARSHT, Irving Joseph, Captain, Minneapolis, Corps Area Service Command, Fort Bliss, Texas.
FEIST, George Van, Lieut. Col., Kansas City, Mo., Grand Central Air Terminal Cal-Aero Training Corporation, Glendale, Calif.
OSHEROFF, William, 1st Lieut., Omaha, Air Corps (nonflying status), Boise, Idaho.
SWEDBERG, William Alfred, 1st Lieut., Duluth, Minn., Corps Area Service Command Station Hospital, Fort Riley, Kan.

Orders Revoked

BACA, Raymond Jameson, 1st Lieut., Fredonia, Kan., Air Corps Station (nonflying status), Fort George Wright, Spokane, Wash.
BAUER, Frank Louis, 1st Lieut., Shenandoah, Iowa, Corps Area Service Command Station Hospital, Camp J. T. Robinson, Ark.
MORETON, Robert Dulaney, 1st Lieut., Rochester, Minn., Corps Area Service Command Station Hospital, Fort Leonard Wood, Mo.

Relieved from Active Duty

FINK, Daniel Louis, 1st Lieut., Minneapolis, Corps Area Service Command Station Hospital, Fort F. E. Warren, Wyo.
MODELEVSKY, Aaron, Captain, Jonesboro, Ark., 2d Cavalry Division, Fort Riley, Kan.
MELTON, Thomas June, Jr., 1st Lieut., Fort Smith, Ark., Fort Snelling, Minn.
SUTTER, Richard Anthony, Captain, St. Louis, 87th Quartermaster Battalion, Fort L. Wood, Mo.

ORGANIZATION SECTION

OFFICIAL NOTES

ADDRESSES BY THE PRESIDENT

Dr. Frank H. Lahey, President of the American Medical Association, has been scheduled to deliver the following addresses in October:

October 3—Sesquicentennial meeting of University of Vermont in conjunction with Vermont Medical Society, Burlington.

October 7—Williamsburgh Medical Society, Brooklyn.

October 15—Interstate Postgraduate Medical Assembly, Minneapolis.

October 20—Hartford City and County Medical Society, Hartford, Conn.

October 29—Beth Israel Hospital Woman's Auxiliary, Brookline, Mass.

October 30—Medical Society of New York, Second District Branch, Garden City, L. I.

MEDICAL ECONOMIC ABSTRACTS

END OF STRIKE OF HOSPITAL EMPLOYEES OF WESTERN PENNSYLVANIA HOSPITAL, PITTSBURGH

The Western Pennsylvania Hospital, Pittsburgh, has just issued a general statement indicating the manner in which the strike of service employees in that institution was ended. The terms of the settlement follow:

The S. C. M. W. A. (C. I. O.) has given up its efforts against the hospital, and we were told Tuesday afternoon, August 12, by Dr. George J. Sarraf, chairman, and two other members of the legislative committee that the hospital was not compelled to do anything on behalf of the striking employees, but he recommended the return of some two hundred to their jobs. This was impossible, as it would have been a breaking of faith with present service employees. Nevertheless the hospital on a number of occasions during the strike had offered to adopt the following schedule as its contribution to a settlement of the strike; so it has promised now to do this.

1. Wages: (*a*) The hospital pledges itself to raise wages of the service employees to a minimum of $45 per month as soon as sufficient money is available either from an increased state appropriation or a trend of increased hospital receipts.

(*b*) The hospital will use every effort to obtain an increase in the hospital income.

2. Employee Representatives: (*a*) The employees shall choose a committee of their own representatives from among the hospital employees, which committee, as employees, shall have the right to meet with the hospital management at all reasonable times.

(*b*) The employees' committee shall have the right to appeal from any decision of the hospital management in connection with matters affecting the employees to a committee of the hospital board of directors, which shall appoint a subcommittee to act on such appeals.

3. As vacancies occur among the service employees, striking employees shall be rehired by the hospital on application without discrimination, in order of seniority, but no former employee who has participated in acts of violence or who has been convicted of violating the injunction issued by the Court of Common Pleas will be rehired.

It is understood that the hospital will not recognize the union.

As regards the third provision and the return of striking employees to their job, the hospital will take back twenty to twenty-five of these men and women within the next ten days to two weeks, as additional employees over the number we now have; and then as other vacancies occur, we will, on application, take back others, which we estimate may total as many as seventy-five to one hundred former employees by Jan. 1, 1942.

It is understood that the hospital will not reemploy any striker who has been active in promoting the strike, making threats or doing violence to the hospital and its employees.

MORE AGED AND MORE PRODUCERS

An increasing proportion of the aged in the population and of women among the old are characteristic of present population trends, according to the statisticians of the Metropolitan Life Insurance Company. Both trends are more evident in large cities, where the number of persons 65 years of age or over increased 47 per cent between 1930 and 1940 as compared with an increase of 35 per cent in the general population. The variation between cities is wide. In Detroit and in Houston, Texas, only one out of twenty-four was 65 years or older in 1940, while in Portland, Ore., there was one old person for about every ten inhabitants. The aged are fewest in the South and most numerous on the Pacific Coast. This increase in the proportion of persons in the older age brackets has been in some ways offset by a corresponding increase in the percentage of people in the main productive age groups from 20 to 64. "Thus," the statisticians explain, "the social burden of carrying the older population has been spread over a wider base."

PHYSICIANS IN CALIFORNIA COMPENSATION PRACTICE

The secretary of the California State Federation of Labor has recently sent a letter to the California Medical Association asking for consideration of the formulation and supervision of a panel of industrial physicians to handle compensation patients. At present the physicians are chosen by the insurance carrier. The whole question is influenced, according to an editorial in the June 19 issue of the bulletin of the Los Angeles County Medical Association, by the fact that bills now pending in the California state legislature to permit free choice of physicians by appointment would, under the present regulation of medical practice in California, admit to such practice all the various cultist practitioners now licensed in that state.

The Committee on Industrial Contract and Insurance Practice of the California Medical Association has urged the association strongly to appoint a committee to meet the representatives of the California State Federation of Labor with a view toward achieving a mutual satisfactory solution.

PHYSICIANS' PAY IN BRITISH INSURANCE

The maximum annual income for coverage in the British compulsory health insurance has been raised from £250 to £420 (from about $1,000 to $1,680). It is estimated that this will bring between four hundred thousand and five hundred thousand new persons under insurance. As this raise in the income limit brought under insurance many who were able to pay regular fees and had been doing so in the past, the British Medical Association asked for an increase in the capitation fee for medical service. The government has agreed to an increase of 6d annually to cover increased costs of additional membership and to take into account the new class of membership.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest: such as relate to society activities, new hospitals, education and public health.)

CALIFORNIA

Personal.—Charles H. Danforth, Ph.D., professor of anatomy, Stanford University Medical School, San Francisco, has received the honorary degree of doctor of science from Tufts College, Boston.——Dr. Charles A. Dukes, Oakland, Vice President of the American Medical Association, has been named a member of the Alameda County Institutions Commission, filling the unexpired term of the late Dr. William H. Strietmann.

University News.—The National Foundation for Infantile Paralysis has made a grant of $4,250 to the University of California Medical School, San Francisco, for the continuance of a study of methods of restoring lost power to paralyzed limbs. The work is being carried out by Drs. John B. deC. M. Saunders, professor of anatomy and lecturer in medical history and bibliography; LeRoy C. Abbott, professor of orthopedic surgery, and Verne T. Inman, clinical instructor in orthopedic surgery.

Society News.—The Los Angeles Society of Ophthalmology and Otolaryngology was addressed, September 22, among others, by Drs. Robert P. Null, Long Beach, on "Ethylene Disulfonate Treatment for Otosclerosis" (preliminary report) and Pierre P. Viole, "Surgical Technic of Intratemporal Repair of the Facial Nerve."——At a meeting of the Los Angeles Society of Neurology and Psychiatry, September 17, Drs. Norman Reider, Los Angeles, and Byron L. Stewart, Compton, spoke on "Mechanisms in Nonanalytic Psychotherapy" and "Electro-Shock Therapy: Technic and Applications," respectively.

FLORIDA

Negro Health Center.—According to *Florida Health Notes*, a group of Negroes in Jacksonville have become so interested in public health that they are raising money to build their own health center. The center will be operated by the Duval County health unit, but the lot and the building are being supplied by the Negroes.

District Meetings.—The North Central Medical District Society met at the Thomas Hotel in Gainesville, October 3. Speakers included Drs. John E. Maines Jr., Gainesville, on "Management of the Duodenal Ulcer Patient"; Richard C. Cumming, Lakeland, "Airsickness," and William C. Roberts, Panama City, "A Plea for the Conservative Treatment of the Inevitable and Incomplete Abortion."——At a meeting of the Northeast Medical District Society in St. Augustine, October 4, Drs. Joseph R. Vallotton, Daytona Beach, spoke on "Diseases of the Gallbladder and Their Recognition"; Charles B. Mabry, Jacksonville, "Fractures of the Tibia," and Wiley M. Sams, Miami, "Experience with the 'Five Day Plan' for Treatment of Early Syphilis."——The Northwest Medical District Society was addressed in Tallahassee, October 2, among others, by Drs. Ernest Henry Ruediger, Chattahoochee, "The Wassermann Test"; Sidney G. Kennedy Jr., Pensacola, "Thyroid Disease," and Whitman C. McConnell, St. Petersburg, "Mechanism of Neurologic Symptoms for General Practice."

GEORGIA

Clinical Conference.—The Georgia Section of the Southeastern Surgical Congress held its annual clinical conference in Thomasville, September 17. The following were on the program:

Dr. Julius C. Davis, Quincy, Fla., Ruptured Ectopic Pregnancy.
Dr. Gilbert F. Douglas, Birmingham, Carcinoma of the Uterus.
Drs. Jesse U. Reaves, Mobile, Ala., Kidney Ptosis.
Dr. George F. Eubanks, Atlanta, Tumors of the Rectum.
Dr. Frederick J. Waas, Jacksonville, Fla., Tumors of the Breast.
Dr. Henry W. Jernigan, Atlanta, Compound Fractures.
Dr. George W. Fuller, Atlanta, Peptic Ulcer.
Dr. Job C. Patterson, Cuthbert, Acute Appendicitis, Ruptured.

Brief speeches were made by Drs. James A. Redfearn, Albany, president-elect, Medical Association of Georgia; Allen H. Bunce, Atlanta, president of the association, and Benjamin T. Beasley, Atlanta, secretary of the Southeastern Surgical Congress.

ILLINOIS

Dr. Cross Retained as State Health Officer.—It was announced on October 2 that Governor Green will retain Dr. Roland R. Cross of Dahlgren as director of the state department of health. Dr. Cross was appointed health director on Oct. 19, 1940 by former Gov. John Stelle after serving in various capacities in the health department since 1933.

Society News.—Dr. Charles F. Sherwin, St. Louis, discussed "Special Problems and Procedures Involving the Gallbladder" before the Adams County Medical Society in Quincy, September 8.——Dr. Daniel P. Foster, Detroit, discussed "Management of Nephritis and Hypertension" before the Sangamon County Medical Society in Springfield, September 4.

District Meeting.—The sixty-seventh annual meeting of the District Medical Society of Central Illinois will be held at St. John's Hospital, Springfield, November 6. The session will open with a tumor diagnostic service and a clinicopathologic conference. A cardiac clinic will be conducted by Dr. Fred M. Smith, Iowa City. Among the speakers to present scientific papers will be:

Dr. Frederick F. Boyce, New Orleans, Basic Problems of Acute Appendicitis; Cancer of the Stomach.
Dr. Kenneth H. Schnepp, Springfield, Diaphragmatic Hernia.
Howard J. Shaughnessy, Ph.D., Chicago, Encephalitis of Virus Origin.
Dr. Burle B. Madison, Springfield, Nonspecific Infections of the Urinary Tract.
Dr. Smith, Certain Aspects of the Treatment of Cardiac Failure.

Chicago

Branch Meeting.—Dr. Virgil P. W. Sydenstricker, professor of medicine, University of Georgia School of Medicine, Augusta, will address the North Side Branch of the Chicago Medical Society, October 16, on "Vitamin Deficiencies."

Dr. Albright to Lecture.—Dr. Fuller Albright, assistant professor of medicine, Harvard Medical School, Boston, will deliver the annual lecture of the Institute of Medicine of Chicago and the Chicago Society of Internal Medicine, October 24, at the Palmer House. His subject will be "Medical Aspects of the Kidney Stone Problem."

Personal.—Dr. Lloyd L. Arnold, professor of bacteriology and public health, University of Illinois College of Medicine, has resigned as a member of the city board of health.——Dr. Edward M. Dorr, instructor in obstetrics and gynecology, Northwestern University Medical School, has been appointed medical director of the clinics maintained by the Illinois League for Planned Parenthood.

Koessler Fellowship Awarded.—Dr. Zale A. Yanof has been awarded the Jessie Horton Koessler Fellowship, which carries a stipend of $500, for his work on blood pyruvic acid in heart disease. Dr. Yanof received his M.D. degree at the Northwestern University Medical School in 1937 and his master of science degree in medicine at the University of Chicago in 1941. His work will be carried on in the department of medicine at the University of Chicago.

Symposium on Poliomyelitis.—The Chicago Medical Society will devote its meeting, October 15, in the Chicago Woman's Club to a symposium on poliomyelitis with the following speakers:

Dr. John A. Toomey, Cleveland, Diagnosis of Poliomyelitis.
Dr. Archibald L. Hoyne, Principles of Treatment of the Acute Stage of Poliomyelitis.
Dr. Albert M. Wolf, Human Convalescent Serum in the Treatment of Poliomyelitis.
Dr. Philip Lewin, Orthopedic Management of Poliomyelitis.

A dinner will be held before the meeting in honor of Dr. Toomey, who is with the division of contagious diseases, Cleveland Department of Public Health and Welfare.

Merit Awards to Alumni.—Physicians who were recently cited to receive the Merit Awards of Northwestern University through the university alumni association include:

Dr. Walter F. Donaldson, Pittsburgh, since 1918 secretary of the Medical Society of the State of Pennsylvania.
Dr. Elmer W. Schnoor, Grand Rapids, Mich.
Dr. Sumner M. Miller, at one time health commissioner of Peoria and founder of the Peoria County Tuberculosis Association.
Dr. Robert L. Cowles, Green Bay, Wis.

Olof Larsell, Ph.D., professor of anatomy at the University of Oregon Medical School, Portland, since 1921, was also honored. The Merit Award is presented annually to Northwestern graduates who have performed outstanding service to their fellow men. The citation on the award reads "In recognition of worthy achievement which has reflected credit upon Northwestern University and each of her alumni."

LOUISIANA

Faculty Changes at Tulane.—Dr. William A. Sodeman, assistant professor of medicine at Tulane University of Louisiana School of Medicine, New Orleans, has been appointed professor of preventive medicine, filling the vacancy that occurred when Dr. William H. Perkins left to become dean of Jefferson Medical College, Philadelphia. The university announces that a grant from the Commonwealth Fund this year has made possible the expansion of the department of preventive medicine, with students brought into direct contact with the patient to study the development of disease. New appointments to the school include:

Dr. Ralph H. Heeren, formerly assistant professor of hygiene, State University of Iowa College of Medicine, Iowa City, to associate professor of preventive medicine.

Dr. Elliston Farrell, formerly assistant clinical professor of medicine, Long Island College of Medicine, Brooklyn, to assistant professor of tropical medicine.

Adrian C. Kuyper, Ph.D., formerly instructor in physiologic chemistry, Ohio State University School of Medicine, Columbus, assistant professor of biochemistry.

Dr. Harry A. Senekji, formerly assistant professor of bacteriology and parasitology at the Royal College of Medicine, Baghdad, Iraq, and director of the Institute of Bacteriology and Pasteur Institute of Vaccines in Baghdad, to instructor in tropical medicine.

MASSACHUSETTS

New Professor of Neurology at Harvard.—Dr. Derek E. Denny-Brown, London, has taken up his duties as professor of neurology in Harvard Medical School and director of the neurologic unit at the Boston City Hospital. Dr. Denny-Brown's appointment dates from September 1939, but during the interval he has been on leave of absence serving as a major in the British Royal Army Medical Corps. Since January 1940 he has been the officer in charge of the medical division of the Military Hospital for Head Injuries in England. The Scientific Advisory Committee of the British Cabinet, as part of its policy of pooling scientific resources in the common interest, has directed Dr. Denny-Brown to proceed to Harvard. The British War Office has released him from military obligations for an indefinite period, during which he retains his commission in the reserve. Dr. Denny-Brown, who attended Oxford University, has served as neurologist to St. Bartholomew's Hospital, London, assistant physician to the National Hospital for Nervous Diseases and registrar to the department for nervous diseases in Guy's Hospital. He has also been a prolific writer in the field of neurology.

Postgraduate Assembly.—The New England Postgraduate Assembly will be held at Harvard University, Cambridge, October 29-30. The assembly is sponsored by the state medical societies of Massachusetts, New Hampshire, Rhode Island, Maine, Vermont and Connecticut. Included among the speakers will be:

Dr. Frank E. Adair, associate professor of surgery, Cornell University Medical College, New York.

Dr. James Burns Amberson Jr., professor of medicine, Columbia University College of Physicians and Surgeons, New York.

Mr. J. J. Bloomfield, sanitary engineer, chief, states' relations section, division of industrial hygiene, National Institute of Health, U. S. Public Health Service, Washington, D. C.

Dr. William Darrach, professor of clinical surgery at Columbia.

Dr. John F. Fulton, Sterling professor of physiology, Yale University School of Medicine, New Haven, Conn.

Dr. John S. Lockwood, associate in surgery, University of Pennsylvania School of Medicine, Philadelphia.

Dr. Harold M. Marvin, associate clinical professor of medicine at Yale.

Dr. William S. McCann, Charles A. Dewey professor of medicine, University of Rochester School of Medicine and Dentistry.

Dr. Damon B. Pfeiffer, associate professor of surgery, Graduate School of Medicine, University of Pennsylvania.

Dr. Homer F. Swift, New York, Rockefeller Institute for Medical Research.

Dr. George W. Thorn, associate professor of medicine, Johns Hopkins University School of Medicine, Baltimore.

Dr. Norris W. Vaux, professor of obstetrics, Jefferson Medical College, Philadelphia.

MICHIGAN

Park Named to Honor Country Doctor.—A village park and athletic field in Kendall, northeast of Gobles, has been named in honor of the late Dr. Chester A. Wilkinson, who at his death in 1940 had served the community more than fifty years, newspapers reported. The park was formally dedicated on September 8. Mr. C. L. Andre of Gobles donated a monument on which is inscribed "In Commemoration of a Country Doctor—1862-1940."

Diphtheria Outbreaks in Migratory Workers.—Twelve cases of diphtheria with two deaths were recently reported in a group of Mexican migratory field workers near Blissfield. The first case was reported in a group of 246 persons crowded into fifteen buildings; there were more than 100 children in the group. The state department of health placed the settlement under quarantine and started immunization procedures. Families who had contact with the diphtheria patients were isolated. A similar outbreak occurred about the same time in four Mexican families living in a farm house in a sugar beet area in Saginaw County. The Saginaw County health department was able to control the outbreak, following the isolation in the Saginaw County Hospital of persons showing positive Schick tests.

MISSISSIPPI

New Health Units.—New full time health departments were started in Rankin and Kemper counties, September 1, with headquarters in Brandon and DeKalb, respectively. Dr. William C. Beaver, Jackson, will be in charge of Rankin County and Dr. John R. Priest Jr., Houston, of Kemper County. Dr. Rhea L. Wyatt, Tupelo, has been made health officer of the Clarke-Wayne counties health unit, with offices in Shubuta. Dr. John G. Egger, Drew, has been placed in charge of the unit in Simpson County and Dr. Jack G. Young, Greenwood, of the unit in Marshall County. Dr. Ernest J. Holder, Greenville, formerly director of the Washington County health department, has been appointed director of the tricounty health district composed of Lawrence, Jefferson Davis and Covington counties. He succeeds Dr. John W. Dugger, now of Jackson.

NEW JERSEY

Academy Opens New House.—The Academy of Medicine of Northern New Jersey, Newark, will open the new Eagleton Medical Civic House at its stated meeting, October 16, with addresses by the donor, Dr. Wells P. Eagleton, by the first president of the academy, Dr. Edward J. Ill, Newark, and by Dr. Howard W. Haggard, New Haven, Conn. Dr. and Mrs. Eagleton presented the house, which adjoins the academy's headquarters, to the organization last May. Alterations are in progress to coordinate the facilities of the two buildings and thereby to provide more space for the library and for meetings.

NEW MEXICO

Personal.—Dr. Hester B. Curtis, director of the division of maternal and child health of the New Mexico Department of Public Health, Santa Fe, has resigned to take a position with the U. S. Children's Bureau.

Pneumonia Control Program.—The state department of public health of New Mexico recently issued a report on a pneumonia control program carried out between Nov. 1, 1940 and June 1 with funds provided by the U. S. Public Health Service. Thirteen stations with laboratory facilities were established; specific drugs and type specific serum were furnished (without cost to those unable to pay for them). Two hundred and sixteen patients were treated, with sixteen deaths. This was a fatality rate of 7.4 per cent, as compared with 11.9 per cent of the previous year's program. The report compares these rates with the average fatality rate of about 25 to 30 per cent before the introduction of chemotherapy. The total amount of sulfapyridine used was 3,430.5 Gm. and the total amount of serum was 3,192,500 units.

NEW YORK

Professor of Surgery Appointed.—Dr. John D. Stewart, associate in surgery, Harvard Medical School, Boston, has been appointed professor of surgery at the University of Buffalo School of Medicine and surgeon in chief at the Edward J. Meyer Memorial Hospital, Buffalo. Dr. Stewart graduated from Harvard Medical School in 1928.

Promotions at Rochester.—The following promotions were recently announced at the University of Rochester School of Medicine and Dentistry:

Dr. Samuel H. Bassett, to be associate professor of medicine.

Dr. Alfred M. Wedd, assistant professor of medicine and physiology.

Dr. Howard B. Slavin, assistant professor of medicine and bacteriology.

Dr. Shirley R. Snow Jr., assistant professor of obstetrics and gynecology.

Drs. Norris G. Orchard and John A. Lichty Jr., assistant professors of pediatrics.

District Meetings.—The Fourth District Branch of the Medical Society of the State of New York held its annual meeting at Lake Placid, September 26-27, with a program made up of two symposiums. One on tuberculosis was presented by Drs. Richard Nauen, Ray Brook; Beverly L. Vosburgh, Schenectady; Frederick H. C. Heise, Trudeau, and William Warriner Woodruff, Saranac Lake. The second symposium, on war surgery, was presented by Drs. John Scudder, New York, "Blood Studies as a Guide to Therapy"; John M.

Converse, New York, "The Problems of Burns in Warfare," and Lieut. Col. George A. Koenig, M. C., U. S. Army, Fort Jay, "War Wounds of the Extremities With and Without Involvement of the Bony Structures."——The thirty-sixth annual meeting of the Eighth District Branch was held at Jamestown, October 2, with the following speakers:

Dr. John Harold Couch, Toronto, Ont., Amputations Through the Hand.
Dr. William Barry Wood Jr., Baltimore, Clinical Use of the Sulfonamide Group of Drugs.
Dr. John A. Toomey, Cleveland, Critical Review of Procedures of Active and Passive Immunization.
Dr. James E. King, Buffalo, Pathology of the Uterine Cervix as Encountered in General Practice.

New York City

Friday Afternoon Lectures at the Academy.—The New York Academy of Medicine will open its sixteenth annual series of Friday afternoon lectures, October 31, with Dr. John Scudder as the speaker on "The Use of Blood and Blood Substitutes." Lecturers for the remainder of 1941 will be:

Dr. Louis S. Goodman, New Haven, Conn., Some Recent Advances in Therapeutics, November 7.
Dr. James Burns Amberson Jr., Cancer of the Lung, November 14.
Dr. Arthur J. Patek Jr., Cirrhosis of the Liver, December 5.
Dr. William S. Tillett, Certain Aspects of the Selectivity and Side Reactions of the Sulfonamide Drugs, December 12.
Dr. Arthur M. Fishberg, Recent Advances in Knowledge of Bright's Disease, December 19.

Seaman Fund Available.—The New York Academy of Medicine announces that a sum of $2,000 from the Louis Livingston Seaman Fund is available for assignment in 1941 for research in bacteriology and sanitary science. The committee will receive applications from institutions or individuals up to November 1. The fund will be expended only in grants in aid for investigation or scholarships for research in bacteriology or sanitary science. Expenditures may be made for technical help, for aid in publishing original work and for the purchase of necessary books or apparatus. Communications should be addressed to Dr. Wilson G. Smillie, chairman of the fund, 1300 York Avenue, New York.

Dinner to Mark Anniversary of "Salvarsan."—The National Anti-Syphilis Committee, under the auspices of the American Social Hygiene Association, will sponsor a dinner at the Waldorf-Astoria, October 11, to celebrate the thirtieth anniversary of the discovery by Dr. Paul Ehrlich of arsphenamine (originally called salvarsan), with Mrs. Ehrlich as the guest of honor. Hon. Frances Payne Bolton, Cleveland, Member of Congress and vice chairman of the antisyphilis committee, will preside and the following speakers will present "The Story of Salvarsan": Dr. Thomas Parran, surgeon general, U. S. Public Health Service, Washington, D. C.; Dr. Hubert S. Howe, chairman of the Committee on Research on Syphilis, and Mrs. Ehrlich.

NORTH CAROLINA

Plasma Bank in Asheville.—A blood plasma bank has been established in Asheville by the Buncombe County Medical Society in cooperation with the five Asheville hospitals and the city health department. The hospitals supply the equipment and take blood from donors, and the laboratory work is done by the health department. Dr. George Farrar Parker was chairman of the committee that organized the plan.

Medical Activities Coordinated.—A new division of medical sciences has been established at the University of North Carolina, Chapel Hill, to include the school of medicine, the school of public health, the university health service and the tricounty (Orange, Person and Chatham counties) health service. Dr. Walter Reece Berryhill, recently appointed dean of the medical school, is chairman of the new division.

Public Health in Area of Army Maneuvers.—The state board of health sponsored a meeting in Rockingham, September 22, to consider health conditions in eight counties which will be in the area of maneuvers of the First Army during October and November. Albert Coates, LL.B., professor of law, University of North Carolina, Chapel Hill, was the principal speaker. The counties affected have adopted uniform regulations for protection of the public health during the period of the maneuvers.

OKLAHOMA

Society News.—Dr. Forrest P. Baker, Talihina, addressed the Tulsa County Medical Society, Tulsa, September 22, on "Some of the Problems in the Management of Tuberculous Patients."——Dr. William M. Gallaher, Shawnee, addressed the Pottawatomie County Medical Society, Shawnee, September 20, on "Furunculosis of the Nose."

University News.—Paul W. Smith, Ph.D., formerly assistant professor of physiology at the University of Tennessee School of Medicine, Memphis, has been appointed instructor in pharmacology at the University of Oklahoma School of Medicine, Oklahoma City. Miss Clare M. J. Wangen, R.N., superintendent of nursing and director of the school of nursing at the University of Virginia Hospitals, has been appointed superintendent of nurses and director of nursing service of the University and Crippled Children's hospitals, the teaching hospitals of the medical school.

OREGON

Personal.—Dr. John F. Belz, Portland, has been appointed rural district director in the department of maternal and child health of the state board of health.——Dr. Edwin R. Powell, Eugene, has resigned as medical director of the Lane County Welfare Commission to enter private practice in California.

State Medical Election.—Dr. George E. Henton, Portland, was named president-elect of the Oregon State Medical Society at the annual meeting in Portland, September 3-6, and Dr. William W. Baum, Salem, became president. Vice presidents elected were Drs. Thompson Coberth, The Dalles; Ralph W. Stearns, Klamath Falls, and Raymond M. McKeown, Marshfield.

PENNSYLVANIA

State Medical Meeting Canceled Because of Pittsburgh Hotel Strike.—The annual session of the Medical Society of the State of Pennsylvania, which was to have been held at the Hotel William Penn, Pittsburgh, October 6-9, was canceled because Pittsburgh's eight leading hotels were closed by a strike. The house of delegates held a meeting in Philadelphia, October 6-8, to transact business and install the new officers. More than two thousand two hundred physicians had registered for the convention and more than a hundred technical exhibitors had prepared exhibits.

Personal.—Dr. Kerwin W. Kinard, Harrisburg, has been appointed chief of the division of clinics, bureau of tuberculosis control, in the state department of health.——Dr. Charles A. Zeller, superintendent of the Farview State Hospital, Waymart, has been appointed superintendent of the Philadelphia State Hospital at Byberry to succeed Dr. Herbert C. Woolley, who resigned and announced his plans to retire, according to the *Pennsylvania Medical Journal*. Dr. Woolley was appointed in 1938 when the state took over the hospital.

Philadelphia

Society News.—Speakers before the Philadelphia County Medical Society, October 15, will be Drs. John R. Paul, New Haven, Conn., on "The Epidemiology of Poliomyelitis"; John Moore Campbell Jr., Harrisburg, "Review of the Recent Occurrence of Poliomyelitis in Pennsylvania," and Arthur Bruce Gill, "The Orthopedic Principles of the Treatment of Infantile Paralysis."——At a meeting of the Philadelphia Roentgen Ray Society, October 2, the speakers were Dr. Eugene P. Pendergrass, S. Reid Warren Jr., Sc.D., and D. E. Haagensen, on "A Comparison of Stereoscopic Miniature Chest Films, Single Roentgenograms on Paper and Single Roentgenograms on Large Films."

TENNESSEE

Changes in Health Officers.—Dr. Alex B. Shipley, Elizabethton, health officer of the Carter-Unicoi-Johnson counties health district, has been made director of a regional health office for East Tennessee. His successor at Elizabethton is Dr. Robert E. Rock, Opelika, Ala.——Dr. William H. Walcott, Milan, is in charge of a new health unit in Carroll County, with headquarters in Huntingdon.

Society News.—Drs. Leonard W. Edwards and Wilson C. Williams addressed the Nashville Academy of Medicine and Davidson County Medical Society, September 9, on "Carcinoma of the Rectum" and "The Role of the County Medical Society in the Improvement of Birth and Death Registrations."——Drs. John L. Dies and William T. Pride, Memphis, addressed the Memphis and Shelby County Medical Society, September 2, on "Addison's Disease" and "Urologic Symptoms Associated with Pelvic Pathology" respectively.——Dr. George W. Leavell, Bristol, Va., addressed the Sullivan-Johnson Counties Medical Society, Bristol, September 2, on "Pellagra—Its Associated Deficiencies and Nicotinic Acid Treatment," and Dr. Hiram A. Laws Jr., Chattanooga, president of the state medical association, spoke on objectives of the association for the coming year.

TEXAS

Fall Pediatric Meeting.—The Texas Pediatric Society held its fall clinical meeting in Dallas, October 3-4, celebrating its twentieth anniversary. The guest speakers from outside the state were Drs. Philip C. Jeans, professor of pediatrics, State University of Iowa College of Medicine, Iowa City, and Donovan J. McCune, assistant professor of pediatrics, Columbia University College of Physicians and Surgeons, New York, who made several addresses each. Other guest speakers were Drs. Charles L. Martin, George T. Caldwell, Alfred I. Folsom, William B. Carrell, James T. Mills and Joseph M. Hill, all of Dallas.

UTAH

Investigation of State Hospital.—A public hearing was to be held by the state welfare commission, September 24, at the Utah State Hospital, Provo, on charges made by former and present hospital employees against officials of the hospital, according to newspaper reports. The investigation is based on a report submitted to Governor Maw by a legislative committee last spring, it was said. The report was based largely on reports contained in affidavits made by former employees. A private hearing was held on August 7 at which charges of maladministration were made, dating from the appointment of Dr. Garland H. Pace as superintendent, it was reported. Dr. Pace issued a statement, September 22, in which he called the investigative procedure "biased, prejudiced and unethical," according to the newspaper account.

WISCONSIN

Dr. Coon Succeeds Dr. Buerki.—Dr. Harold M. Coon, medical superintendent of the Wisconsin State Sanatorium, Statesan, has been appointed superintendent of the Wisconsin General Hospital and the Wisconsin Orthopedic Hospital for Children, professor of hospital administration and executive secretary of the University of Wisconsin Medical School, Madison. He succeeds Dr. Robin C. Buerki, who recently became dean of the University of Pennsylvania Graduate School of Medicine and director of hospitals of the University of Pennsylvania in Philadelphia.

District Meeting.—The Tenth District of the State Medical Society of Wisconsin held its annual meeting at the Sacred Heart Hospital, Eau Claire, September 25, with the following speakers:

Dr. Elmer L. Sevringhaus, Madison, Obesity.
Dr. Jerome R. Head, Chicago, Pathological Diseases of the Chest.
Dr. Cecil J. Watson, Minneapolis, Uremia.
Dr. Ernest M. Hammes, St. Paul, Diagnosis of Spinal Cord Diseases.
Dr. Albert M. Snell, Rochester, Minn., Portal Cirrhosis.

At a morning session Drs. Head, Watson and Sevringhaus conducted clinics, and after a dinner in the evening Dr. Hammes made an address entitled "Believe It or Not in Medicine."

GENERAL

Medical Employment in California.—The California State Personnel Board announces that many opportunities are available in state employment. Any one interested is requested to communicate with the state personnel board, 1015 L Street, Sacramento, Calif.

Society Election.—Dr. Ralph M. L. Dodson, Portland, Ore., was elected president of the Pacific Association of Railway Surgeons at the annual meeting in Salt Lake City in September. Drs. Curtis E. Smith, San Francisco, and Spencer Wright, Salt Lake City, were elected vice presidents and Dr. William T. Cummins, San Francisco, was reelected secretary. The 1942 meeting will be held in Portland.

Plague Control Recommendations.—At a Plague Control Conference in Salt Lake City, August 28-29, attended by health officers of the Pacific and Mountain states and North Dakota and representatives of the public health service, recommendations were made calling for an expenditure of about $1,800,000 to carry out the following points in a plague control program:

1. Expand the public health service and state surveys to determine the location of infected rodents.
2. Conduct an educational program as to the nature and dangers of the disease.
3. Institute and conduct organized extermination of rats, execute ratproofing measures and control the disposal of garbage, which serves as food for rats in cities, villages and about military establishments.
4. Destroy wild rodents in areas in which infection is found.
5. Establish zones free from wild rodents about cities, villages and areas of military activities to prevent possible spread of the infection through them to rats.

The control of rodents is to be carried out with the technical assistance of the mobile laboratory units of the public health service, which will be used in the collection of rodents, dry hunting and trapping and examination for infection followed by poisoning and gassing in burrows of remaining animals, according to a report of the conference. The conference was called by Dr. Thomas Parran, surgeon general of the U. S. Public Health Service, because of evidence that plague infection among wild rodents of the western part of the United States is spreading eastward and to stimulate rat control programs in urban and rural areas. Plague caused the deaths of two boys in California this summer, the first cases to occur there since 1938.

CANADA

Gross Memorial Lecture.—Dr. Thomas Duckett Jones, Boston, will deliver the fourth Louis Gross Memorial Lecture at the Montreal Jewish General Hospital, October 16. His subject will be "Rheumatic Fever: The First Decade of One Thousand Patients."

Poliomyelitis in New Brunswick.—A newspaper dispatch dated September 26 stated that there had been 299 cases of poliomyelitis in the province of New Brunswick up to that date. Opening of schools was deferred in some parts of the province until September 23 and in other parts until September 30. Two cases were discovered in the town of Plaster Rock, September 28, and schools were closed for one week. A dispatch dated September 16 announced that there had been thirteen deaths among 263 cases.

LATIN AMERICA

U. S. Physicians Lecture in Mexico.—Dr. George R. Herrmann, Galveston, Texas, addressed the Sociedad de Cardiología Mexicana in Mexico City, September 10, on "The Role of the Blood and Kidneys in the Maintenance of Circulatory Equilibrium."——Dr. George T. Pack, New York, delivered a series of lectures, September 26 to October 4, as the guest of the Faculty of Medicine of the University of Mexico, on "The Treatment of Cancer and Allied Diseases."

CORRECTIONS

Hurley Hospital in Flint.—In a news item in THE JOURNAL, September 27, page 1107, Hurley Hospital of Flint, Mich., was erroneously said to be in Detroit. The item was about extramural courses to be given there this month.

Changes in Staff at California.—In a news item in THE JOURNAL, September 13, page 945, the names of the following physicians were included in an announcement concerning the University of Minnesota Medical School, Minneapolis. They should have appeared as promotions at the University of California Medical School, San Francisco. The names are: Drs. Harold H. Rosenblum, assistant clinical professor of medicine; Henry M. Weyrauch Jr., assistant clinical professor of urology, and Sidney J. Shipman, clinical professor of medicine.

Government Services

Physicians Wanted for Children's Bureau

The U. S. Civil Service Commission announces that registers are to be established to fill maternal and child health specialist positions in the Children's Bureau, U. S. Department of Labor. There are three options in which applicants may qualify, pediatrics, obstetrics and orthopedics. For each of these options, lists will be established for administrative, research and clinical positions. Duties of the administrative positions include giving consultations and advisory service to state and other government agencies on maternal and child health programs. The research positions involve the planning or directing of studies in such fields as infant and maternal mortality and child growth in relation to social, economic and other factors. Persons appointed to clinical positions will do clinical work in one of the options. A written test will not be given for these positions, but competitors will be rated on their experience, education and corroborative evidence. Applicants must have graduated from a recognized medical school, must have served a year's internship and in addition must have had full time clinical training in the type of work in which they seek appointment. Salaries will be from $3,200 to $5,600 a year. Further information and application forms may be obtained from the commission's representative at any first or second class post office or from the central office in Washington, D. C.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 9, 1941.

Hospital Damage in London from Air Raids

Sir Frederick Menzies, until recently chief medical officer of the London council, has stated that extremely important developments have taken place since the outbreak of the war which must have a profound influence on our hospital system of the future. Little seemed to have been said in the medical press of the result of the enormous structural damage to hospitals, both municipal and voluntary. The damage represented a loss of thousands of beds. Calculating the cost of bringing the hospitals back to their previous condition at prewar prices, it would not be less than $100,000,000 and, if the war ended tomorrow, it would probably take four or five years to complete the cost of reconstruction. Voluntary contributions would not meet the situation because the capital expenditure would be too great. Local authorities would have to shoulder heavy expenditure for housing, education and roads; it did not seem that they could do much to help the capital expenditure for the reconstruction of hospitals. It looked, therefore, as if the great bulk of the capital expenditure must come from the state. In such circumstances much would depend on what view the government took on the whole subject of "regionalization of hospitals and health services," a subject now under discussion. In connection with the Emergency Hospital Service (a war organization) many thousands of hospital beds have been provided, either by completely new hospitals on sites outside large cities or by additions to existing hospitals. Obviously such hospitals cannot simply be scrapped after the war. They must be dovetailed into the existing hospital service or linked up with a regionalization scheme.

Milk as a Food Under Present Conditions

In the House of Lords Lord Dawson (the physician) said that the consumption of milk was increasing and that this was contributing in no small measure to the good health of the people, notwithstanding the rationing of other foods and the inevitable wear and tear of the times. We could curtail meat and even the valuable cheese, provided we maintained the milk supply. The production of milk should be ranked as of as much importance as the production of munitions of war. Stress and anxiety were apt to produce digestive disorders, and this was already happening, especially in sedentary workers with long hours and harassing journeys to and from home in winter. We must prevent such illness and maintain health, and for this milk was the remedy. We were fortunate in the matter of epidemic illness last winter but could not be sure of equal good fortune next winter. Here again the answer was milk. Dairy herds were at present being reduced in numbers. We could afford a greater reduction in bullocks because the same quantity of animal feed would produce twice as much food in the form of milk from cows as in the form of meat from bullocks. There was some anxiety that the Ministry of Agriculture had been hanging on to the bullock population too long and that these animals had been absorbing food which should have been reserved for dairy herds. While he did not say that a certain amount of meat was desirable and even necessary, he submitted that the second on the priority list for food should be eggs rather than beef. If milk production was reduced, we should import powdered whole milk and powdered skim milk. He hoped that milk rationing would be avoided.

Lord Dawson was assured in a reply for the minister of agriculture that there was no intention of killing any cow that was not diseased or otherwise uneconomic. It was the daily concern of the minister to secure milk either in its liquid state or as condensed or powdered milk so as to provide supplies for next winter. The farmers had done a grand job in securing our food supplies and they would help with milk supplies. He had no doubt that during the coming winter with the help of New Zealand and the United States we should secure all the milk we required.

War Pensions: Training of the Disabled

In the House of Commons the minister of pensions stated that since the outbreak of war $6,950,000,000 had been expended in pensions and allowances to those injured or bereaved by the war and that this year $185,000,000 was expected to be spent. The number of pensioners and dependents last year was 818,000, a reduction of 3⅓ per cent. In most cases of pensioners detained in countries occupied by the enemy he had arranged with the United States for part payment of their pensions. No fewer than 446 pensioners of the last war relinquished their pensions for the benefit of the national effort. The original scheme for pensions for civilian injured in the war has been improved and now covers the whole civilian population whether gainfully employed or not. Since the inception of the scheme, injury allowances have been granted to 72,000 civilians, while pensions to dependents of civilians killed by enemy action now amount to about 10,000. Compensation is being granted to widows and dependents of men in the merchant navy and fishing fleet killed by enemy action. Provision has also been made for payment to wives and dependents of mariners captured by the enemy as long as they remain in captivity. At the outbreak of war there were nine Ministry of Pensions hospitals with a bed strength of 1,833; now the bed strength is 7,647.

TRAINING OF THE DISABLED

A big mistake made after the last war was not putting into operation a good scheme to give ex-service men a chance to do something more than draw pensions. The government is now considering a scheme not merely for the rehabilitation of these men but for training them for some useful occupation. The minister of pensions has also been entrusted with the task of acting as guardian of war orphans, of whom six hundred are already on the ministry's books. The minister's duty is to see that the children are properly looked after and that the pension granted to them is properly expended for their benefit.

The Presidency of the Royal College of Surgeons

Sir Alfred Webb-Johnson has been elected president of the Royal College of Surgeons in succession to Sir Hugh Lett. He is surgeon to and lecturer on surgery at the Middlesex Hospital. Among his publications are "Surgical Aspects of Typhoid and Paratyphoid Fevers," "Notes on a Tour of the Principal Hospitals of the United States and Canada," "Metastasis of Melanotic Cancer Eighteen Years After Removal of the Eyeball" and "Tuberculosis of the Male Genital Tract." Rear Admiral Gordon-Taylor and Mr. R. L. Braithwaite have been elected vice presidents of the college.

Sir Frederic Still

The death at the age of 73 years of Sir Frederic Still has removed a leading pediatrician. Educated at Cambridge and Guy's Hospital, where his career was distinguished, he decided to specialize in the diseases of children. He was appointed assistant physician to the greatest children's hospital—the Hospital for Sick Children, Great Ormond Street. In 1896 he presented for his Cambridge M.D. degree a thesis entitled A Special Form of Joint Disease Met with in Children, the substance of which appeared in the first edition of Allbutt's System of Medicine. This short article presented to the medical world a disease previously unrecognized and now known everywhere as Still's disease. He defined it as a chronic progressive

enlargement of joints with enlargement of lymphatic glands and spleen, coming on before the second dentition. In 1899 he was appointed physician for diseases of children at King's College Hospital, London, the first medical school to establish a special department for diseases of children. In 1906 King's College made him its first professor of diseases of children. In 1905 he joined Sir James Goodhart, his former chief, in preparing the fifth edition of Diseases of Children. He remained co-editor until 1909, when he published his own textbook, Common Diseases of Children, which was based on his lectures and was a great success, reaching a fifth edition in 1927. To the Osler Birthday Volumes he contributed an article on Some Seventeenth Century Writings on Diseases of Children. In 1931 he published a scholarly work entitled A History of Pediatrics. He was first president of the British Pediatric Society and an honorary member of similar societies in the United States and Canada. In 1927 he gave under the Ingleby Trust interesting lectures on Place in Family as Factor of Disease.

BUENOS AIRES

(From Our Regular Correspondent)

July 12, 1941.

Control of Diphtheria

Dr. J. J. Leunda reported to the Sociedad Argentina de Pedriatría that excellent results were obtained in Argentina with antidiphtheria vaccination when three doses of anatoxin were given at intervals of twenty days. This procedure is especially suitable for treating families. A two dose vaccination with anatoxin or with the two combined antigens affords a considerable immunity. A single dose of the precipitated or activated toxoid likewise confers a considerable degree of immunity and is adapted for aggregations of children. Repetition of the vaccination secures a greater protection. Schick's antitoxin is well suited to older children and adults. In younger children it can be used to confirm the efficacy of the technic. In children more than 12 years of age and in adults who exhibit allergic reactions it is best to begin with small doses of 0.1 to 0.2 cc. By repeating this dose at intervals of ten to fifteen days, permanent immunity is secured. Dr. Leunda believes in compulsory antidiphtheria vaccination but thinks that the populace had best be first educated through systematic vaccinations conducted in schools and infected regions.

The significance of electrocardiographic examinations in diphtheria was pointed out by M. R. Arana and R. Kreutzer. During 1933-1939, 1,304 electrocardiograms were made in Buenos Aires of 621 children. Only in 43 were no modifications observed. One of these patients died (2.33 per cent). The remaining 578 (93.06 per cent) showed cardiac changes. Of these, 257 were more and 321 were less significant. Wherever pronounced modifications were seen, the mortality was high (58.64 per cent). The mortality was lower where cardiac modifications were fewer. In 22.38 per cent of 56 patients who were ultimately discharged but who initially had shown serious heart changes in the electrocardiogram, permanent serious sequels persisted. In 2 cases, in which the clinical examination was unable to reveal cardiac damage, damage was seen in the electrocardiogram. Both patients died. The authors regard the electrocardiogram as significant in the prognosis of diphtheria. Ninety-two per cent of the patients in whom no serious cardiac injury was seen recovered. However, no absolutely favorable prognostic value can be claimed for the electrocardiogram in all cases in which serious heart injury is absent.

There is a tendency in Colombia (THE JOURNAL, May 3, 1941, p. 2097) to make antidiphtheria vaccination compulsory. The municipal council of Bogotá has decided to introduce compulsory vaccination in all public schools and all other municipal institutions. There is no charge for the service.

Psittacosis

The course of epidemics of psittacosis in Argentina from 1929 to 1939 was recently traced by Dr. Barros. The pandemic of 1929-1930 affected chiefly Buenos Aires and portions of the northern provinces of Córdoba and Tucumán. About 200 cases were observed. In the following years only scattered foci were encountered. In December 1938 a laboratory infection was incurred by a staff member of the state bacteriologic institute of Buenos Aires. In 1939 27 cases were reported, and 13 (48 per cent) of the patients died. The disease attacks principally adults at the age level of 45-55 years, especially dealers in birds, with no predilection as to sex. Children are almost never involved. Transmission of psittacosis from man to man may be regarded as demonstrated. In Argentina the larger epidemics occurred toward the end of the winter season. Mortality from psittacosis is estimated to take place in about 20 per cent of all who are infected. The pandemic of 1929-1930 was attributed to imported parrots. The cases observed subsequently were referred to endemics originating in local breeds. Recently the virus of psittacosis was found in outdoor animals. The incubating period in man lasts from seven to fourteen days. In the last epidemic in Buenos Aires hemorrhagic manifestations in the skin were seen. All methods of treatment employed so far have failed of success.

Fourth Pan American Conference of the Red Cross

The fourth conference of the Red Cross was held in Santiago de Chile. The following resolutions were adopted: The creation of an inter-American commission of the Red Cross for the purpose of organizing auxiliary measures which need to be employed in emergencies; promotion of close cooperation between the national societies of the Red Cross and public authorities; governmental subsidies; participation in some forms of taxation, concessions and of sales monopolies; postal, telegraphic and tax freedom; increased publicity; closer cooperation between all national organizations of the Red Cross; care for the victims of the European war, provided the belligerent countries guarantee safe delivery of supplies for civilian use; increased facilities for the return of citizens of American republics and the evacuation of women and children from the occupied countries; aid to prisoners held in belligerent countries; creation of a special commission within the central and local boards which are entrusted with organizing and directing auxiliary measures to be adopted in emergencies; the organization of first aid courses and of a special service of giving aid in aviation accidents.

Marriages

FREDERICK PETERSON BERLIN to Miss Mary Katherine KLIPFEL, both of Wapakoneta, Ohio, in Hattiesburg, Miss., in July.

BRITTON E. PICKETT JR., Carrizo Springs, Texas, to DR. MARY RUTH BRITTAIN of Conway, Ark., June 29.

HOWARD ROSS CREWS, Pineville, W. Va., to Miss Elizabeth Traylor Wilkinson of Huntington, July 2.

JOHN HANSFORD THOMAS JR., Greenville, Va., to Miss Mary Johnston Lasley of Staunton, June 19.

THEODORE BALDWIN MCCORD, Fairfax, Va., to Miss Kathryn Elizabeth Funk at Strasburg in July.

FRANCIS RECORD WHITEHOUSE, Lynchburg, Va., to Miss Doris Irion of Dallas, Texas, June 21.

SEYMOUR SHULMAN JACOBSON, Brooklyn, to Miss Marjorie Eloise Cowen of New York, July 4.

WILLIAM M. RHODES, Columbus, Ohio, to Miss Jeanne Storing in Worthington, June 16.

PAUL L. PETERSON, Geneva, Neb., to Miss Mary Gwen Glazier of Broken Bow, June 18.

JOSEPH MOORE DIXON to Miss Mary Virginia Matthews, both of Roanoke, Va., June 27.

MILTON J. LILIEN, Newark, N. J., to Miss Eleanor Altman of New York, July 15.

Deaths

George Cooper Pardee, Oakland, Calif.; Universität Leipzig Medizinische Fakultät, Saxony, Germany, 1885; member of the board of health from 1889 to 1891, member of the city council from 1891 to 1893, mayor from 1893 to 1895, regent of the state university from 1899 to 1903 and governor of California from 1903 to 1907; president of the board of directors of the East Bay Municipal Utility District and a member of the Oakland Port Commission for many years; aged 84; died, September 1.

Henry Darling Niles ✠ New York; Johns Hopkins University School of Medicine, Baltimore, 1925; member of the American Dermatological Association and the American Academy of Dermatology and Syphilology; served in various capacities on the staffs of the New York Hospital, New York Post-Graduate Medical School and Hospital and the West Side Hospital; aged 39; died, August 27, in Montana in an automobile accident.

William A. Ellingwood ✠ Rockland, Maine; University of Maryland School of Medicine, Baltimore, 1908; since 1934 member of the House of Delegates of the American Medical Association; member of the American Academy of Ophthalmology and Otolaryngology; past president of the Knox County Medical Society; on the staff of the Knox County General Hospital; aged 58; died, August 30.

Michael Edward Connor, New Orleans; Dartmouth Medical School, Hanover, N. H., 1901; member of the Louisiana State Medical Society; veteran of the Spanish-American War; formerly a member of the International Health Board of the Rockefeller Foundation; port medical officer of the United Fruit Company; aged 61; died, September 7, in the Mercy Hospital.

Alfonso G. Castelli, New York; Regia Università degli Studi di Palermo, Facoltà di Medicina e Chirurgia, Italy, 1896; member of the Medical Society of the State of New York; formerly examiner for the selective service board; on the staffs of the Roosevelt, French and Bellevue hospitals; aged 68; died, August 24, of coronary thrombosis.

Frank Mikelsky Mikels, Long Beach, Calif.; Medical School of Maine, Portland, 1910; member of the American Psychiatric Association; on the staffs of the Seaside Memorial Hospital, St. Mary's Hospital, and the Long Beach Community Hospital; aged 61; died, August 29, in the Compton (Calif.) Sanitarium of coronary occlusion.

Wyatt Barnes ✠ Bocagrande, Fla.; Medical Department of the University of Alabama, 1904; member of the Medical Association of the State of Alabama; formerly acting assistant surgeon in the United States Public Health Service; aged 59; died, August 31, in Birmingham, Ala., of carcinoma of the urinary bladder.

Simon Peter Bittner ✠ Glendale, Calif.; University of Oregon Medical School, Portland, 1906; assistant clinical professor of medicine, University of Southern California School of Medicine, Los Angeles; member of the American College of Chest Physicians; aged 61; died, August 29, of coronary thrombosis.

Oswald Gretton Taylor, Energy, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1899; member of the Medical Society of the State of Pennsylvania; for many years a medical missionary in India; aged 66; died, August 31, in the Jameson Memorial Hospital, New Castle, of cerebral thrombosis.

Joseph Morris Rosenthal ✠ Philadelphia; Jefferson Medical College of Philadelphia, 1910; member of the American Academy of Ophthalmology and Otolaryngology; served in the navy during the World War; aged 56; on the staff of the Jewish Hospital, where he died, September 3, of coronary thrombosis.

Allan Ballah Rutherford, Owen Sound, Ont., Canada; University of Toronto Faculty of Medicine, 1901; chief coroner of Grey County; for many years medical health officer for the townships of Derby and Sarawak; member of the board of education; aged 67; died, August 7.

William Pohlman Pool, Litchfield, Conn.; Long Island College Hospital, Brooklyn, 1894; fellow of the American College of Surgeons; formerly clinical professor of obstetrics and gynecology at his alma mater; aged 72; died, September 1, of heart disease.

Arvid Ernest Kohler, Moline, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1898; served during the World War; aged 67; died, September 6, in the Moline Public Hospital of a mediastinal tumor.

Augustus F. Walter, Gladbrook, Iowa; State University of Iowa College of Medicine, Iowa City, 1882; member of the Iowa State Medical Society; aged 84; died, August 23, at the Evangelical Deaconess Hospital, Marshalltown, of uremia.

James M. Hanrahan ✠ Elizabeth, N. J.; College of Physicians and Surgeons, Baltimore, 1910; aged 57; consulting surgeon to St. Elizabeth Hospital and the Alexian Brothers Hospital, where he died, September 1, of cerebral hemorrhage.

Edward O. Trahan ✠ Baton Rouge, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1899; on the staff of Our Lady of the Lake Sanitarium; aged 64; died, August 29, in the Touro Infirmary, New Orleans.

Eugene Worley, Preston, Idaho; Loyola University School of Medicine, Chicago, 1918; member of the Idaho State Medical Association; on the staff of the General Memorial Hospital; aged 48; died, August 29, of coronary thrombosis.

Alfred Hezekiah Rogers, Hepler, Kan.; Medico-Chirurgical College of Kansas City, Mo., 1899; member of the Kansas Medical Society; aged 77; died, August 13, in the Girard (Kan.) General Hospital of cerebral hemorrhage.

Charles Franklin Smith ✠ Uniontown, Pa.; University of Maryland School of Medicine, Baltimore, 1923; formerly secretary of the Fayette County Medical Society; aged 44; died, August 14, while at Tilghman, Md.

Harry Morton Garrison, Evansville, Ind.; Southwestern Homeopathic Medical College and Hospital, Louisville, Ky., 1910; member of the Indiana State Medical Association; aged 56; died, September 6, of heart disease.

Charles Robert Gill, St. Augustine, Fla.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1884; served during the World War; aged 80; died in August at the Flagler Hospital.

Winfield Wardlow Cox, Gulfport, Miss.; Memphis (Tenn.) Hospital Medical College, 1904; member of the Mississippi State Medical Association; aged 60; died, September 7, in the King's Daughters Hospital.

John R. Smith, Douglas, Ga.; Atlanta College of Physicians and Surgeons, 1909; member of the Medical Association of Georgia; served during the World War; aged 56; died, August 17, of hypertension.

Ones Forrest Page, Sandpoint, Idaho; Marion-Sims College of Medicine, St. Louis, 1897; formerly mayor; at one time state senator; served during the World War; aged 74; died, August 24.

Mary Margaret Armstrong-Guernsey, Bergenfield, N. J.; Boston University School of Medicine, 1888; formerly a medical missionary in India; aged 76; died, August 11, of cerebral hemorrhage.

Arthur J. Meythaler, Earlville, Iowa; St. Louis University School of Medicine, 1902; member of the Iowa State Medical Society; county coroner; aged 64; died, August 29, of coronary occlusion.

George Howard Fuller ✠ Tuscola, Ill.; University of Wooster Medical Department, Cleveland, 1896; for many years president of the school board; aged 73; died, September 1, in Decatur.

William T. Castleberry, Nacogdoches, Texas (licensed in Texas, under the Act of 1907); aged 76; died, July 23, of injuries received in June when he was struck by an automobile.

Lester Stuart Witherow ✠ Harrisburg, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1923; aged 49; died, August 27, at Laconia, N. H., of coronary occlusion.

Richard M. Genius, Winter Park, Fla.; Hahnemann Medical College and Hospital, Chicago, 1892; aged 77; died, September 3, in New York of cerebral hemorrhage.

Philip Barron Weinberg, Whitefield, N. H.; Tufts College Medical School, Boston, 1920; member of the New Hampshire Medical Society; aged 53; died, August 26.

Asa Wilkins Berryman, Glendale, Calif.; State University of Iowa College of Medicine, Iowa City, 1884; aged 88; died, June 20.

John Harrison Arnold, Versailles, Ky.; Jefferson Medical College of Philadelphia, 1892; aged 71; died, September 13.

Emmett Scarlett, Hamilton, Ont., Canada; University of Toronto Faculty of Medicine, 1904; aged 64; died, August 25.

Edmund Tayloe Gordon, Goldsboro, N. C.; Leonard Medical School, Raleigh, 1909; aged 58; died, August 30.

Peter Augustus Bier, Pittsburgh; Pulte Medical College, Cincinnati, 1878; died, August 31.

Bureau of Investigation

ALBERT ABRAMS

E. R. A. Still Exploited by Ignorant, Uninformed Pseudoscientists

Some members of the medical profession have recently been circularized with sample copies of the *Journal of Electronic Medicine*, formerly known as *Physico-Clinical Medicine* and founded about twenty years ago by Albert Abrams, A.M., M.D., LL.D., F.R.M.S. THE JOURNAL has repeatedly emphasized that not an iota of scientific evidence supports these theories or the use of these devices. A recent issue of the *Journal of Electronic Medicine* contains an article entitled "Diagnostic Reasoning." The author states in part: "If different doctors pursue their own courses, irrespective of any standard method and scientific ground, it may be easily seen that the bars are let down for various degrees of charlantry [sic] and quackery, which should never be tolerated." That's why scientific physicians cannot tolerate "electronic medicine." The author continues:

> The solution of the difficulty, simply stated, is to place diagnosis on such a scientific basis that any physician making it by means of his diagnostic processes, should be able to have it immediately verified by any other physician using the same methods. It should not be necessary to tinker with a diagnostic instrument to coax it to register results. If an instrument is accurate, it will produce the same results under similar conditions, no matter whether one physician or another is operating it. I have seen cases cited where electronists do not even inquire nor endeavor to ascertain the apparent condition of the patient—leaving it all to his diagnostic set and his human reflex to tell the story, which might have been different if another physician were standing in his place and operating the instrument.

So electronic medicine is still the same old hokum.

It would be more logical to pretend to develop a device which, by passing a few wires over the body of an automobile, would indicate whether or not the car was missing a spark plug or had a broken axle, a flat tire, a rattle in the top or a tack in the cushion.

Samuel Hopkins Adams said many years ago in regard to nostrums: "Our national quality of commercial shrewdness fails us when we go into the open market to purchase relief from suffering." This statement applies particularly to those who are misled by electronic medicine with its ludicrous machines.

STIPULATIONS

Agreements Between Federal Trade Commission and Promoters of Various Products

The following items are abstracts of stipulations in which promoters of "patent medicines," cosmetics or medical devices have agreed with the Federal Trade Commission to discontinue certain misrepresentations in their advertising. These stipulations differ from the "Cease and Desist Orders" of the Commission in that such orders definitely direct the discontinuance of misrepresentations. The abstracts that follow are presented primarily to illustrate the effects of the provisions of the Wheeler-Lea Amendment to the Federal Trade Commission Act on the promotion of such products.

"Dimple Making Device."—A product of this description is put out by a John H. Lofquist, trading as the Darling Dimple Company, Rock Island, Ill. In May 1940 the Federal Trade Commission reported that Lofquist had stipulated that he would cease representing that his device will produce permanent dimples on the face of the user; that it is the subject matter of a United States or other patent unless and until such is a fact, and that it was patented or invented by "Dr. J. H. Lofquist" or contains special or scientific features which are the result of medical advice or services.

Dr. Williams Pink Pills.—According to the advertising of the W. T. Hanson Company, Schenectady, N. Y., these pills would build blood, aid breathing, restore underweight persons to normal weight, render one less susceptible to colds or diseases, enable every gland, organ or muscle to function better, or be a competent treatment or effective remedy for fatigue, "fatigue anemia," and certain conditions caused by the menopause or puberty. In September 1940 the Hanson concern signed a stipulation with the Federal Trade Commission agreeing to discontinue these misrepresentations and a few others, such as that a low blood count is due only to red corpuscle deficiency; that pimply skin indicates an iron deficiency or that the use of "Dr. Williams Pink Pills" will clear the skin.

Fleer's Dubble Bubble Chewing Gum.—This was advertised under such claims as that it was rich in dextrose and that the dextrose content would help relieve fatigue, give "pep," animation or energy, increase vitality in men, women and children and be a competent aid or treatment for a great variety of oral disorders or dental diseases, such as gingivitis, Vincent's infection and pyorrhea, and do some other things. In October 1940 the Federal Trade Commission reported that the Frank H. Fleer Corporation of Philadelphia, which puts out this gum, had signed a stipulation agreeing to discontinue these and other misrepresentations.

Food Ferrin.—This was sold by the Battle Creek Food Company, Battle Creek, Mich., which in September 1940 stipulated with the Federal Trade Commission that it would discontinue certain advertising misrepresentations. Among these were that the stuff is a blood builder, except in cases in which an iron deficiency in the blood exists; that it is beneficial for a tired, nervous or irritable condition or for lack of coloring in the cheeks, except when such conditions are due to iron deficiency; that it imparts new life, pep or freedom from nervousness, except in cases in which lack of these is due to iron deficiency; that it has been scientifically determined that the chlorophyl content of "Food Ferrin" is utilizable in the building of blood, and that it is known that a majority of women do not get as much iron as their system requires from their ordinary food supply. The company further agreed to cease representing that in no cases other than extreme anemia, when the hemoglobin is diminished to approximately one third the normal amount, does a blood deficiency in iron cause the tissues to starve or suffocate for lack of oxygen, or skins to wither or pale or lose elasticity.

Frostilla Fragrant Lotion.—In January 1940, the Frostilla Company, Inc., Elmira, N. Y., signed a stipulation with the Federal Trade Commission in which it promised to desist from representing that the ingredients of its product are definitely known to be more costly than those employed in competitive lotions generally, when such is not, in fact, definitely known; that competitive lotions in general leave a sticky or gummy residue; that "Frostilla Fragrant Lotion" or any similar preparation sold under that or any other name excels other hand lotions in general, prevents the nail cuticle from becoming rough or ragged, is effective for every case of parched skin or reddened hands and tones or stimulates the skin or does more than aid in conditioning it, and that it is "the" perfect hand lotion or is most always preferred when hand lotions are tested side by side. Some months later (May 1940) a similar stipulation to withdraw misrepresentations regarding this product was entered into by Charles Dallas Reach, Newark, N. J., trading as Charles Dallas Reach Company, an advertising agency.

Har-Ex Capsules.—This product is put out by Kirkwood Laboratories, Inc., Clifton, N. J. In February 1940 this concern signed a stipulation with the Federal Trade Commission promising to cease advertising this nostrum as "a competent or effective remedy for hay fever, rose fever or asthma, as a new medicine or method of treatment, as quick to ease suffering or sneezing from hay fever or rose fever or to give relief from trouble due to local irritation." The respondent also agreed to desist from the representation that the misery of rose fever, hay fever or asthma is ended by use of its preparation.

"Health House" Preparations.—Under this brand the Battle Creek Dietetic Supply Co., Battle Creek, Mich., sells cosmetics, medicinal preparations and so-called food supplements. These include a "Hormone Cream," a "Vitamin F Cream," "Yeast Vitamin Tablets," "Vitamin E Capsules" and "Cough Syrup with Vitamins A, B, D and G." In May 1940 this concern promised the Federal Trade Commission to desist from representing that vitamins help to restore either obese or underweight persons to normal weight, except when the condition is due to vitamin deficiency. The company also agreed to cease designating as "Vitamin F" any fatty acids that may appear in any of its products.

Highwood's Old Indian Prescription.—In October 1940 Jacob G. Bowser and his wife, Opal Keller Bowser, trading as the Ponca Drug Company, Ponca City, Okla., promised the Federal Trade Commission to cease making certain misrepresentations in the exploitation of this product. Among these were that it will relieve the worst cases of stomach trouble in a few minutes, or colds, fever and tired feeling in one day, or that the use of the preparation will do more than act as a laxative, temporarily relieving ailments due to constipation or digestive fermentation. Still earlier another governmental agency had reported taking action against the Ponca Drug Company, Ponca City, Okla. This was the Food and Drug Administration, one of whose bulletins (July 1937) stated that this agency had confiscated shipments of "Indian Remedy" and "Old Indian Liniment" on the ground that false and fraudulent claims on the labels violated the Pure Food and Drugs Act. The Indian Remedy may have been another name for "Highwood's Old Indian Prescription" previously mentioned, as it was advertised for some similar conditions, such as "stomach trouble" and "tired feeling." Government chemists reported that it consisted essentially of epsom salt (163 grains per fluid ounce) and a minute amount of iron compound, and water. This case (Notice of Judgment 26805) was abstracted in THE JOURNAL, Sept. 24, 1938, page 1229.

"Hush" Products.—Five deodorants sold under this brand were mentioned in a stipulation given to the Federal Trade Commission in July 1940 by Estelle A. Kirstein, trading as Hush Sales Company, Philadelphia; these were "Hush Cream Deodorant," "Hush Liquid Deodorant," "Hush Sno," "Hush Powder Deodorant" and "Hush Stick Deodorant." In her stipulation Estelle Kirstein promised to cease advertising, among other things, that millions (or any fictitious number) of persons use her products or that these preparations have absolute power to control or stop body perspiration odors. One of these products, "Hush Liquid Deodorant," was reported by the Maine state chemists in 1935 to contain 12.55 per cent of aluminum chloride, a common ingredient of body deodorants.

Ivory Soap.—This is put out by the Procter and Gamble Company, Cincinnati, which in September 1940 signed a stipulation with the Federal Trade Commission. In this it agreed to desist from representing that any test as to the mildness of "Ivory Soap" as compared with any competitively sold soaps shows that "Ivory Soap" is the purer soap, or otherwise representing that the mildness of a soap is indicative of its purity.

McCollum Nostrums.—This line of products, put out by McCollum Laboratories, Inc., Gardena, Calif., comprises medicinal preparations and so-called food supplements including "Isodent," "Isomar," "Isoveg," "Isolax," "Kelp Tablets," "Breakfast Granules," "'Alfalfa Tea and Tablets" and "Garlic-Parsley McCollum Tablets." The Federal Trade Commission objected to some of the claims under which they were sold, and in June 1940 the concern promised to discontinue these misrepresentations. Among them were that the products supply to the average diet the mineral or vegetable elements in which such diet is deficient; that "Isodent" is a balanced dentifrice or restores natural color to the teeth, builds firmness of the gum tissues, attacks acid mouth germs or reduces tartar; that "Isomar" is a balanced gland food or combines the most valuable organic minerals from land or sea vegetation; that "Isoveg," a food product, provides a source of many of the more important nutritional factors or that such factors are frequently missing in the average daily menu; that "Kelp Tablets" are rich in vital minerals or that such minerals are necessary to body nutriment; that "Breakfast Granules" are an aid to digestion; that "Alfalfa Tea and Tablets" aid nature in providing a source of natural alkaline nutriment, are a valuable internal supplement to creams or powders or increase liquid secretion, or that "Garlic-Parsley McCollum Tablets" are capable of reducing high blood pressure. The concern also agreed to cease representing that clinical investigation has shown that either garlic or parsley will cause a lowering of blood pressure or relieve headaches, dizziness or similar symptoms resulting from functional high blood pressure. It is worth noting that some years ago the state chemists of Virginia analyzed six of the McCollum products, namely "Alfalfa Tea," "Alfalfa Tablets," "Kelp Tablets," "Isoveg," "Isomar" and "Isotone." They reported that all six of these contained the same substances (but in varying percentages), namely phosphoric acid, calcium, magnesium, ferric oxide, alumina, manganous oxide, cupric oxide, silica, potash, soda and chlorine.

Milks Emulsion.—Advertising this as a competent treatment for constipation or as "Nature's Remedy" or a product which would free the user from constipation for all time, and was endorsed by "thousands of mothers," the Milks Emulsion Company, Terre Haute, Ind., promised the Federal Trade Commission in August 1940 to discontinue these misrepresentations. It also promised to cease using the word "Emulsion" or any letters that simulate emulsion in sound or spelling to designate its preparation as compounded and manufactured prior to May 13, 1940. Over a period of years "Milks Emulsion" has, in numerous instances, been declared to violate the Pure Food and Drugs Act because of false or fraudulent claims appearing in or on its trade packages.

Nature's Laxative.—A stipulation concerning the advertising of this product was signed in September 1940 by Richard O. Mills trading as R. Mills and Co., Chicago. In this he promised the Federal Trade Commission to cease representing that the product is mild or soothing or is a cleansing agent for the promotion of intestinal hygiene generally; that it stimulates or tends to stimulate the kidneys or liver; that its use is indicated for the stomach, kidneys or liver; that it is a carminative, tonic or tonic-laxative or is different from other preparations containing the same laxative ingredients. Mills also agreed to cease using such phrases as "Best to Aid Nature" and "The Ideal Laxative" in any manner tending to imply that use of the preparation is indicated for all types of constipation or that it contains laxative principles or ingredients not present in other preparations. He further promised to cease using the phrase "R. Mills and Co. Makers of Nature's Laxative" or other use of the word "Makers" which might convey the impression that he manufactures the product he sells, or owns or operates the plant in which it is made.

Rux Compound and Williams Formula.—These are put out by one H. L. Williams, trading as Williams SLK Laboratories, Milwaukee. In a stipulation that he signed in September 1940 Williams promised to cease advertising that the "alkalizing" or "salicylating" effect of "Rux Compound" is different from that of old fashioned or modern salves or liniments; that it is absorbed by the blood stream or "salicylates" the system; that physicians say it is a proved method of relieving rheumatic pain; that it acts on congestion of rheumatic pain or helps flush acids out of the body or kidneys, and other similar representations. Williams also promised to cease representing that his "Williams Formula" will stimulate digestion or act on the whole digestive mechanism, or do more than promote the flow of urine as a mild diuretic, eliminate waste material from the kidneys or help build up the quality of the blood, or that it has any therapeutic value in excess of a laxative for the temporary relief of acute constipation, a bitter stomachic or a very mild and limited diuretic, or that it acts in any other way or to any greater extent on the stomach, bowels or kidneys. Further, Williams promised that he would not make therapeutic claims for any ingredients in either of his preparations when such drugs are not contained therein in quantities recognized by science and the medical profession as sufficient to give significant therapeutic value.

"Strengthening the Eyes."—This book, promoting a system of eye exercises, is put out by the MacFadden Book Company, Inc., New York. In April 1940 the Federal Trade Commission reported that the concern had stipulated that it would cease advertising that the book is based on new facts or that the advice or exercises are new or revolutionary; that by following the advice and exercises a person with weak or defective vision may quickly train any of the muscles of his eyes so as to correct such defects; that exercise is the only real help in cases of impaired vision; that use of the concern's method will enable one to obtain perfect eyesight either with or without the use of glasses, and that as a result of the use of this method those who have used glasses to overcome the effect of faulty refraction, far or near sightedness, astigmatism, squint eyes, cross eyes, weak, watering eyes, poor vision, eye headache or strain can generally remove these defects and be relieved of the necessity for wearing glasses.

Sweetheart Toilet Soap.—This product is sold by the Manhattan Soap Company, Inc., New York, which in March 1940 promised the Federal Trade Commission to discontinue certain misrepresentations. Among these were that research experts or laboratories, in connection with their quality ratings of soaps, have tested all brands of soaps; that beauty experts endorse the use of "Sweetheart Toilet Soap" or that doctors prescribe its use; that use of the soap will cause the skin to become healthy or keep it healthy, or that its use will cause one to become or stay young; or, by use of such terms as "skin diet" or similar words or phrases, that "Sweetheart Toilet Soap" contains anything that will nourish or feed the skin; and that any premium is gold plated, when in fact it is gold electroplated. In an earlier case (April 1937) the same concern, also trading under the name Bristol Soap Co., had signed a stipulation with the Commission that it would discontinue certain misrepresentations, such as the use of the words "Doctor" or "Dr." to imply that its products are made in accordance with the prescription or under direction of a physician, or contain special scientific features resulting from medical advice or service. The company also agreed to cease using the word "medicated," to imply that its products have been treated or impregnated with medicine, or the word "health," to describe soap products so as to imply that they contain ingredients which give the user certain benefits beyond those obtained from using any toilet soap, when these are not the facts.

Tampax.—Tampax, Inc., New York, in October 1940 stipulated with the Federal Trade Commission that the firm would "discontinue representations that there is a consensus among gynecologists to the effect that there is no comparison between 'Tampax' and the external sanitary napkin from a hygienic standpoint; that the American Medical Association has examined and accepted 'Tampax' for advertising [presumably referring to a misstatement of the facts in regard to this matter], or that physicians as a group have endorsed the product"

Tangee Theatrical Lipstick.—The advertising of this product claimed that it would end "that painted look," that it could not make one look painted and contained no pigment or paint, that it was created at the request of America's most prominent actresses and that as a lipstick it is "permanent." In October 1940 the George W. Luft Company, Long Island City, N. Y., signed a stipulation with the Federal Trade Commission in which it agreed to discontinue these claims. In January 1941 Warwick & Legler, Inc., New York, advertising agency, also signed an identical stipulation on behalf of its client the George W. Luft Company.

The Rule of Life or O-K Calendar.—Scientific Instruments, Inc., Chicago, put out the birth control device known as "The Rule of Life," advertising it as "a slide rule which calculates accurately the sterile and fertile cycles according to the Ogino-Knaus-Rhythm Theory." However, in signing a stipulation with the Federal Trade Commission in February 1940 the concern admitted that according to the weight of reliable medical opinion at present no method of calculating such periods can always be relied on. The company then agreed to cease representing that "The Rule of Life" or "O-K Calendar" or any other device operating on the same theory, provides a method of complete, or any definitely stated percentage of, birth control.

Verard Solution.—This is distributed by one Ruth Cecil Arden, trading as the Verard Company, New York, who in March 1940 signed a stipulation with the Federal Trade Commission agreeing "to cease representing that the preparation is of itself a competent treatment or effective remedy for athlete's foot; that any person using such medication will no longer suffer from red or swollen feet or certain other discomforts; that beneficial results may be expected by the user without regard to the stage of the infection, the presence of accompanying factors or the necessary hygienic measures which must attend any type of medication for such conditions."

Wild's Cold Capsules and Wild's Cough Syrup.—Herman R. and Robert M. Wild and Harry F. Thompson, trading as the Wild Drug Company, Huntington, W. Va., promote these products. In February 1940 these persons promised the Federal Trade Commission to cease advertising that they manufacture either product; that the cold capsules have a tonic effect or have value in building up body resistance; that they will stop colds or prevent their development; that they will provide relief from colds, unless this is expressly limited to relief of certain symptoms, or that all ingredients of the capsules are harmless. They also stipulated that they would cease representing that the cough syrup will prevent the development of colds; that it will relieve bronchial troubles or colds, unless the relief is expressly limited to certain symptoms, and that it will stop any cough or afford relief from a cough regardless of its severity.

Zip (Beverage).—This is a carbonated water put out by the Zip Company of Chicago. In August 1940 the Federal Trade Commission announced that the concern had agreed to cease representing that "Zip" is an alkalizing beverage, is a health factor of proved value, keeps one physically fit, is a sure relief for indigestion, corrects any physical condition whatsoever or renews energy. The company also agreed to desist from representations that its beverage helps burn up surplus flesh or adipose, or has any therapeutic properties or any appreciable effect on bodily conditions beyond such degree of refreshment as may properly be attributed to a carbonated water beverage.

Correspondence

NUTRITION

To the Editor:—I wish to take exception of Dr. Clendening's statements relative to vitamins in THE JOURNAL, September 20. As usual the major premise is taken as being correct. He has taken a group of individuals who are factory workers and have an income. However, how about those on relief, who get $4.80 a week with at least $2 going for lodging? For $1.80 you can't get much to eat. This is self evident.

In addition I have seen in hospital experience where doctors would not be able to recognize a simple pellagraderm simply because they are not so minded, yet their statements are taken as being conclusive as not having seen such cases of vitamin deficiency. It must be remembered that the human body can stand a lot; vitamin deficiencies take experimentally in man from three to six months at the earliest to manifest themselves, and most often by laboratory and not by clinical observation. Even extreme diet faddists at some time or other get some food which contains a small amount of the vitamins sufficient to keep them in a marginal state until illness or some extreme stress and strain intervene.

The so-called occurring "neuritis" often will manifest itself early only in a heightened sensitivity to external hot and cold, sensitive skin and tongue and mild finger tingling before any actual pain does occur, which is most rare, even in such a deficiency disease as pernicious anemia. The subject is still wide open for objective observation. However, a systematized criterion as to what constitutes vitamin deficiencies must be established. With the advent of quantitative blood and urine studies together with symptomatology and signs, the whole field will be cleared up within a few years.

My statements are based on private and hospital clinical experience among "relief" patients and lower and middle class patients. As for cereals, those appear to be the last food most persons eat today. Diets of 6 to 8 cups of coffee a day together with 2 to 3 packs of cigarets are not uncommon and are sufficient in themselves to cause anorexia and loss of weight. A total caloric intake of even less than 500 calories is very common, particularly in the lonely person who has a small fixed income.

PHILIP R. TROMMER, M.D., Philadelphia.

PLAGUE

To the Editor:—We have been repeatedly warned that plague infection is spreading eastward from the Pacific Coast (Eskey, C. R., and Hass, V. H.: *Pub. Health Rep.* **54**:1467 [Aug. 11] 1939; Hampton, B. C., *ibid.* **55**:1143 [June 28] 1940; General Medical News, THE JOURNAL, September 13, p. 947). It would seem that more information than exists at present should be at hand before it can be accepted as a fact that the infection is really spreading and before any serious alarm is raised. Infection may indeed seem to be spreading eastward if a research for infected rodents spreads in the same direction. For example, the recent discovery of plague infected rodents in the Dakotas may prompt an extension of investigation eastward into Minnesota and Iowa, and if positive results are obtained in the latter states it would appear that the infection had just arrived there. It would seem that the search for plague infected rodents ought to be conducted in all states simultaneously and repeatedly before conclusions are drawn. Such studies may have been, or perhaps are being made, but they have not come to my attention.

It is obvious that human bubonic plague, supposedly first introduced into California many years ago by human or by rat carriers, may have spread to indigenous species of rodents and may be actually traveling eastward. But according to Evans and Holdenried (*Proc. Soc. Exper. Biol. & Med.* **47**:63 [May] 1941), migration of rodent hosts of sylvatic plague is not alone responsible for the apparent spread. Dissemination by this means is slow, for the greatest distance traveled by tagged members of one colony of ground squirrels was only 1,300 yards. It is of course possible for infection to be spread at a more rapid rate by birds of prey or by insects. Furthermore, sylvatic plague among wild rodents and classic bubonic rat borne plague are apparently different, but whether they are caused by different types of Pasteurella pestis or whether one form changes into another by passage through certain hosts is as yet unknown. It is also possible that sylvatic plague is endemic on this continent wherever wild rodents and insect vectors exist and can be found if sought for.

These problems must be solved before it can be definitely stated that plague is spreading in the United States. Similar uncertainties also pertain to Rocky Mountain spotted fever, typhus fever, undulant fever and tularemia, which also may be endemic wherever the hosts of the respective diseases and vectors for their transmission live.

HOBART A. REIMANN, M.D., Philadelphia.

BRITISH LIBRARIES SUFFER LOSSES

To the Editor:—A new "Aid to Britain" has been established by the Medical Library Association. Letters were sent a few months ago to the medical libraries of England and Scotland asking how much damage had been suffered to their books. The Medical Library Association has offered to restore these losses as far as possible from duplicate books and journals in the American medical libraries.

The British librarians are responding enthusiastically, saying that such an understanding of their difficulties and the desire to cooperate in rehabilitating libraries that have suffered damage through enemy action make the burden easier to bear. Most of the libraries succeeded in moving their books to safer areas before the bombing reached their buildings. However, they have suffered considerable loss of recent journals through sinking of vessels enroute to England. Shipments of November issues of American journals seem to have been particularly unfortunate.

The medical library of the University of Bristol reported on July 24 the loss of the roof of a new wing and further damage by water in a second fire. The departmental library of anatomy was entirely destroyed. Guy's Hospital suffered much damage, but the Wills Medical Library is intact and was functioning on July 25. St. Thomas's Hospital of the Medical School in London reported on August 6 that the building suffered loss of windows and other structural damage but that its volumes had been evacuated.

The great library of the British Medical Association on Tavistock Square in London reported on August 11 a very near miss upsetting the bookstacks in the basement. The building received two further hits, without damage to the library. The Royal College of Surgeons, Lincoln's Inn Fields, London, suffered greatly. Its museum suffered a direct hit in one of the biggest air raids, and the buildings were entirely destroyed. The college offices and the library reading room alone escaped but were badly damaged by water. However, all but current journals had been evacuated, and of the latter many were lost. This letter was dated August 2.

The National Institute for Medical Research reported on July 30 that its library escaped damage except for a few broken windows. The librarian, Miss Ethel Wigmore, was formerly librarian of the Bellevue School of Nursing. She went to England a year ago to work with the British Red

Cross and Order of St. John Hospital Library War Organization. In February she received a provisional appointment for one year at the institute and is now acting librarian. The Royal College of Physicians in London also suffered a direct hit, but its books were saved and are now evacuated. This was reported on August 12.

The London School of Hygiene and Tropical Medicine stated on August 18 that its building was seriously damaged in an air raid but that the library escaped damage except for broken doors and windows. Valuable and irreplaceable volumes were removed to safety.

No structural damage was suffered at the Royal Faculty of Physicians and Surgeons of Glasgow, but at the time of writing, August 7, there was considerable loss of periodicals. The librarian is making an especial appeal for reprints of the more important original contributions to the American medical journals.

The Medical Library Association is an organization of the medical libraries of the United States and Canada, with a few international members. It also has a large supporting membership among librarians and those interested in the work of the association. Through its exchange, medical libraries that are members exchange duplicate books and journals from their own holdings to help build up other libraries of the association. Miss Mary Louise Marshall of Tulane University, New Orleans, is president. Colonel Harold Jones, librarian of the Army Medical Library and editor of the *Association Bulletin*, was president for the last two years.

In response to the British letters, members of the association will accumulate the journals lost in transit to the libraries abroad and send them after the war is over, except to libraries where the journals are now needed, and these will be shipped at once, the chance being taken that they will be delivered. Physicians in all American cities are requested to take current journals that they do not wish to keep to their nearest medical library to assist in this effort to help the British libraries and their readers.

Florence A. Cooksley, M.A., Rochester, N. Y.
Librarian, Rochester Academy of Medicine.

HISTORY OF COCAINE AS A LOCAL ANESTHETIC

To the Editor:—In the history of anesthesia, the discovery of the application of cocaine as a local anesthetic by Carl Koller has always seemed to be the one chapter free from acrimoniously disputatious conflict. The following is a letter from Dr. Koller of New York:

My dear Dr. Seelig:

I happened yesterday to read your article in the Howard Lilienthal dedicatory volume on the Progress of Medicine in the Last Hundred Years, and admired its broad sweep and inspired language. Coming to the passage dealing with anesthesia, I could not help being pained by your adopting the incorrect statements, not of Freud himself but of his admirers and hangers-on, that Freud had anything to do with starting cocaine as a local anesthetic in surgery.

Freud has stated the facts correctly in his Autobiography, but in such ambiguous language that his enthusiastic admirers claimed for him what was not according to the facts. The facts are that neither Freud nor I discovered that cocaine is a local anesthetic. This was discovered by Dr. Albert Niemann, the assistant of the great chemist Woehler, who extracted the potent principle from coca leaves in 1860 that Dr. Scherzer brought home with him from Peru which he visited during his globe-encircling voyage on the Austrian frigate *Novara*. After him a whole galaxy of physiologists and pharmacologists made thorough investigations of the drug. Nobody paid a great deal of attention to the benumbing effects of cocaine on the tongue and lips until the Peruvian army surgeon Moreno y Mayz remarked in 1868 that the sensory paralyzing effects might be put to use in medicine. After him the Baltic surgeon Anrep in 1879 published an excellent article about his work in the laboratory of the Jena pharmacologist Rossbach, in which he made the same remark without doing anything about it.

So matters stood until the spring of 1884, when Freud conceived the idea of curing a friend of morphinism by administering cocaine to him. It was an ill fated idea.

Freud became interested in cocaine and its general physiological effects and, in his ignorance of the vast literature, he conceived some experiments about the effects of the drug on muscular strength and endurance. He never dreamed of anesthesia. He asked me to share in the experiments. We broke off the experiments when Freud went to Hamburg to call on his fiancée.

Before leaving he asked his friend Leopold Koenigstein to try the drug on the "diseased eye" (am kranken Auge). No thought of anesthesia. Koenigstein, a rather dull person, was fascinated by the vasoconstricting powers of cocaine and tried to cure iritis and trachoma with it. When I told him that it was an excellent anesthetic he said that I was mistaken. But that did not prevent him from reading, on the same evening that I read my paper before the Gesellschaft der Aerzte, his paper in which he extolled the anesthetic properties of cocaine without saying one word of his having the information from me. That was too much for Freud and Julius von Wagner-Jauregg, and they made him (without any intercession on my part) write a letter to one of the three Vienna medical weeklies in which he acknowledged having no claim to priority regarding the idea of surgical anesthesia. You can find this letter in one of the October (?) numbers of the *Medizinische Presse* (?) of 1884.

Freud in his Autobiography regrets the fact that he passed by this great opportunity and gives full credit to me. I find fault with him only in that he failed to call off his overenthusiastic admirers for giving credit to him for what he did not have any right to.

The facts are that Freud did not have anything whatever to do with cocaine anesthesia, nor did he write a single word about work on cocaine in 1885 (whereas my work dates from 1884) that had not been done better and more scientifically by Anrep in 1879. Historical untruths are very difficult to destroy.

Carl Koller, M.D., New York.

P. S.—I enclose a reprint (Nachträgliche Bemerkungen über die ersten Anfänge der Lokalanästhesie, *Wien. med. Wchnschr.* (No. 1) **85**:7, 1935) of an article which I published purposely in a Viennese medical weekly so that it would surely come under Freud's eye. I thought it might make him come out and disavow the claims of his admirers that he had instigated my work on cocaine as a local anesthetic. However, it had no such effect. I was on friendly terms with Freud and did not wish to accuse him directly of dishonesty. However, his expression in his Autobiography "that he had told me also of cocaine" was so ambiguous as to cause all this untrue representation.

You are at liberty to make any use you want to, or no use at all, of my letter.

C. K.

The letter is not only of human interest but also of historical significance.

M. G. Seelig, M.D., St. Louis.

FIRST SURGERY ON PATENT DUCTUS ARTERIOSUS

To the Editor:—Even at this late date, for the sake of historical accuracy, I call attention to an error on page 1264 of The Journal for Oct. 12, 1940: Dr. Beck states that "John Monro of Boston" in 1907 suggested operation to tie off a patent ductus arteriosus. The surgeon referred to was John C. Munro, surgeon in chief at the Carney Hospital, Boston, not "John Monro."

Henry A. Christian, M.D., Brookline, Mass.

Council on Medical Education and Hospitals

CONTINUATION COURSES FOR PRACTICING PHYSICIANS

For a number of years the Council on Medical Education and Hospitals has collected and published data concerning the various types of continuation courses that have been offered to practicing physicians. Following is a list of the continuation courses which will be available during the fall quarter of 1941 and it is the intention of the Council to prepare and disseminate similar information at intervals of three months. Such advance notice of graduate courses will be of value to physicians who may be planning to take some postgraduate work but who at present have no convenient means of knowing when and where the subjects in which they are interested will be taught.

WILLIAM D. CUTTER, M.D., Secretary.

The first four pages of this list were published in THE JOURNAL Oct. 4, 1941, beginning on page 1205.—ED.

Continuation Courses for Practicing Physicians, Fall of 1941—Continued

Institution	Courses Scheduled to Begin	Length and Content of Course	Number of Students Accepted for Each Course	Registration Fee and/or Tuition	For Detailed Information Write to
PATHOLOGY					
Harvard Medical School, Courses for Graduates	Arranged on application	1 month	4	$40 [1]	Assistant Dean, Harvard Medical School, 25 Shattuck St., Boston
Columbia University College of Physicians and Surgeons	Nov. 3 [2]	3 afternoons a week, 3 weeks (pathology of the blood)	3 to 6	$75	Dean of the School of Medicine, Columbia University, 630 W. 168th St., New York City
Woman's Medical College of Pennsylvania	Sept. 17	8 months course	2	$100 to $300	Dean, Woman's Medical College of Pennsylvania, Henry Ave. and Abbottsford Rd., Philadelphia
PEDIATRICS—See also under Obstetrics					
University of California School of Medicine	Dec. 15; Jan. 15	1 and 2 week courses	Limited	$90 [3]	Director of Maternal and Child Health in state health departments of California, Arizona, Nevada, New Mexico, Utah and Idaho
The Children's Memorial Hospital, Chicago	Oct. 13	4 weeks	.....	$100	Chief of Staff, The Children's Memorial Hospital, 707 Fullerton Ave., Chicago
University of Illinois College of Medicine	Arranged on application	8 lectures, 4 months clinical (child psychology)	.....	Varies [3]	Assistant to the Dean, University of Illinois College of Medicine, 1853 W. Polk St., Chicago
Harvard Medical School, Courses for Graduates	October; January	8 months to 1 year	Limited	$300 to $600 [1]	Assistant Dean, Harvard Medical School, 25 Shattuck St., Boston
Tufts Medical School, Postgraduate Division	Jan. 5	4 weeks	4	$50 [1]	Chairman, Postgraduate Division, Tufts Medical School, 30 Bennet St., Boston
Center for Continuation Study, University of Minnesota	Dec. 15	6 days	.....	$25	Center for Continuation Study, University of Minnesota, Minneapolis
Kings County Hospital, Brooklyn (Joint Committee on Post-Graduate Education)	October	10 sessions on heart disease in childhood	8	$10	Registrar, Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn
Bellevue Hospital (New York University College of Medicine)	Arranged on application	1 year, full time	.....	$200 a year	Assistant Dean, New York University College of Medicine, 477 First Ave., New York City
Columbia University College of Physicians and Surgeons	October, monthly	1 month or longer, full time	3 to 12	$125	Dean of the School of Medicine, Columbia University, 630 W. 168th St., New York City
PERIPHERAL VASCULAR DISEASES					
Newark City Hospital, Newark (New York University College of Med.)	Nov. 12	2 afternoons a week, 4 weeks	6 to 12	$25	Dean, New York University College of Medicine, 477 First Ave., New York City
Columbia University College of Physicians and Surgeons	Dec. 8	5 days	4 to 10	$35	Dean of the School of Medicine, Columbia University, 630 W. 168th St., New York City
New York Academy of Medicine.....	Oct. 13	2 weeks (graduate fortnight)	.....	$5	Executive Secretary, Committee on Medical Education, 2 E. 103d St., New York City
PHYSICAL THERAPY					
New York Polyclinic Medical School and Hospital	Arranged on application	4 weeks or more	.....	$100	Medical Executive Officer, New York Polyclinic Medical School, 335 W. 50th St., New York City
PNEUMONIA					
State Hygienic Laboratory.....	Fall	3 days (pneumonia typing technic)	.....	None [3]	Director, State Hygienic Laboratory, Iowa City
New York University College of Medicine	Arranged on application	4 weeks, full time	4	$150	Assistant Dean, New York University College of Medicine, 477 First Ave., New York City
PROCTOLOGY					
Harvard Medical School, Courses for Graduates	Nov. 17	6 days	8 or more	$50 [1]	Assistant Dean, Harvard Medical School, 25 Shattuck St., Boston
Tufts Medical School, Postgraduate Division	Oct. 27	6 days	.....	$25 [1]	Chairman, Postgraduate Division, Tufts Medical School, 30 Bennet St., Boston
	Nov. 3	2 or 4 weeks, mornings (advanced course)	.....	$50 to $100	
New York Polyclinic Medical School and Hospital	Jan. 2	6 weeks	.....	$75 to $100	Medical Executive Officer, New York Polyclinic Medical School, 335 W. 50th St., New York City
PUBLIC HEALTH					
Loyola University School of Medicine	Fall	1 or more semesters (various courses)	.....	$10 to $125	Dean, Loyola University School of Medicine, 706 S. Wolcott Ave., Chicago
Johns Hopkins University School of Hygiene and Public Health	Nov. 18	8 week quarter (various courses)	.....	$10 to $75	Dean, School of Hygiene and Public Health, Johns Hopkins University, 615 N. Wolfe St., Baltimore
Massachusetts Institute of Technology	Sept. 29	2 semesters	.....	$300 a semester	Admissions Office, Massachusetts Institute of Technology, Cambridge
Albany Medical College.....	Arranged on application	1 year correspondence course, 11 conferences, 2 days in residence	.....	$30	Director, Extension Course in Public Health, Albany Medical College, New Scotland Ave., Albany
University of North Carolina School of Public Health	Sept. 24	3 or 4 months	.....	$100	Dean, University of North Carolina School of Public Health, Chapel Hill

References will be found on page 1286.

Continuation Courses for Practicing Physicians, Fall of 1941—Continued

Institution	Courses Scheduled to Begin	Length and Content of Course	Number of Students Accepted for Each Course	Registration Fee and/or Tuition	For Detailed Information Write to
RADIOLOGY					
Harvard Medical School, Courses for Graduates	Arranged on application	1 month, 3 or 5 days a week (general and special roentgenology)	Limited	$35 to $100 [1]	Assistant Dean, Harvard Medical School, 25 Shattuck St., Boston
Tufts Medical School, Postgraduate Division	Jan. 13	4 days	.....	$25 [1]	Chairman, Postgraduate Division, Tufts Medical School, 30 Bennet St., Boston
Center for Continuation Study, University of Minnesota	Nov. 3 [2]	3 days (radiology of of head and neck)	.....	$15	Center for Continuation Study, University of Minnesota, Minneapolis
Columbia University College of Physicians and Surgeons	Jan. 5 [2]	3 months, afternoons (basic radiation therapy)	.....	$125	Dean of the School of Medicine, Columbia University, 630 W. 168th St., New York City
New York Polyclinic Medical School and Hosptial	First of any month	6 week and 3 month courses (interpretation and technic of roentgenology)	.....	$150 to $300	Medical Executive Officer, New York Polyclinic Medical School, 335 W. 50th St., New York City
New York University College of Medicine	Oct. 1	3 months, 3 afternoons a week (diagnostic roentgenology)	16	$100	Assistant Dean, New York University College of Medicine, 477 First Ave., New York City
STATISTICS, MEDICAL					
Columbia University College of Physicians and Surgeons	Oct. 27	30 hours	8	$45	Dean of the School of Medicine, Columbia University, 630 W. 168th St., New York City
SULFONAMIDE THERAPY					
Center for Continuation Study, University of Minnesota	Nov. 10	3 days	.....	$15	Center for Continuation Study, University of Minnesota, Minneapolis
SURGERY					
Tulane University of Louisiana School of Medicine	Jan. 5	6 weeks	.....	$150	Director, Tulane University of Louisiana School of Medicine, 1430 Tulane Ave., New Orleans
Harvard Medical School, Courses for Graduates	November; on arrangement	1 month	6 or more; 4	$100 [1]	Assistant Dean, Harvard Medical School, 25 Shattuck St., Boston
Columbia University College of Physicians and Surgeons	Oct. 13 [2]; Nov. 10	6 days (traumatic surgery)	5 to 30	$60; $35	Dean of the School of Medicine, Columbia University, 630 W. 168th St., New York City
	Oct. 27 [2]	5 days	10 to 20	$75	
	Arranged on application [2]	12 sessions (surgical anatomy)	2 or more	$125	
	Arranged on application	8 sessions (blood transfusion)	1 to 8	$35	
New York Polyclinic Medical School and Hospital	Jan. 2; on arrangement	6 weeks	.....	$100 to $350	Medical Executive Officer, New York Polyclinic Medical School, 335 W. 50th St., New York City
	Nov. 1	4 weeks (plastic reparative surgery)	.....	$250	
Graduate School of Medicine, University of Pennsylvania	January	2 weeks (laryngeal surgery)	.....	$250	Dean, Graduate School of Medicine, University of Pennsylvania, Philadelphia
TROPICAL MEDICINE					
Tulane University of Louisiana School of Medicine	Fall	4½ months	.....	$300	Director, Department of Graduate Medicine, Tulane University of Louisiana School of Medicine, 1430 Tulane Ave., New Orleans
TUBERCULOSIS					
Tufts Medical School, Postgraduate Division	Dec. 1	6 days	.....	$25 [1]	Chairman, Postgraduate Division, Tufts Medical School, 30 Bennet St., Boston
Mississippi State Tuberculosis Sanatorium	Arranged on application	2 weeks	.....	None	Medical Director, State Sanatorium, Sanatorium
Cornell University Medical College	Dec. 10	1 day	.....	None	Secretary, Tuberculosis Sanatorium Conference of Metropolitan New York, 386 Fourth Ave., New York City
UROLOGY					
Harvard Medical School, Courses for Graduates	November; December; January	1 month, mornings (clinical urology or genitourinary surgery)	Limited	$75 a month [1]	Assistant Dean, Harvard Medical School, 25 Shattuck St., Boston
Center for Continuation Study, University of Minnesota	Nov. 10 [2]	3 days	.....	$15	Center for Continuation Study, University of Minnesota, Minneapolis
Long Island College Hospital (Joint Committee on Post-Graduate Education)	Any month	1 month or more	3	$25 a month	Registrar, Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn
New York Polyclinic Medical School and Hospital	Oct. 1	1 year	.....	$800	Medical Executive Officer, New York Polyclinic Medical School, 335 W. 50th St., New York City
VENEREAL DISEASES					
Howard University College of Medicine	January	3 months (venereal disease control)	10	$20 [4]	Dean, Howard University College of Medicine, Washington, D. C.
Bureau of Social Hygiene, New York City Department of Health	October	4 to 8 weeks	15	None	Director, Bureau of Social Hygiene, 125 Worth St., New York City
New York Polyclinic Medical School and Hospital	Arranged on application	6 week and 3 month courses	.....	$35 to $75	Medical Executive Officer, New York Polyclinic Medical School, 335 W. 50th St., New York City
Hospital of the University of Pennsylvania, Philadelphia	Fall	1 or 2 weeks	.....	$25	Director, Institute for Control of Syphilis, Hospital of the University of Pennsylvania, Philadelphia

A limited number of opportunities for postgraduate study in the clinical departments are also offered by the University of Chicago, The School of Medicine; Tulane University of Louisiana School of Medicine; Johns Hopkins University School of Medicine; Duke University School of Medicine; Vanderbilt University School of Medicine; Meharry Medical College, and the University of Wisconsin Medical School.

1. Registration fee of $5 covers all courses taken within twelve months.
2. Admission is limited to physicians who have had adequate previous training and experience in the special field.
3. State boards of health furnish either the funds covering tuition fees, maintenance or transportation for physicians of the state.
4. Applicants may qualify for a monthly stipend from the United States Public Health Service.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

CHICAGO, Feb. 16-17, 1942. Council on Medical Education and Hospitals, Sec., Dr. William D. Cutter, 535 North Dearborn Street, Chicago.

MEDICAL CORPS, UNITED STATES NAVY

Examination. Assistant Surgeon with the permanent rank of Lieutenant (junior grade) and Acting Assistant Surgeon with the probationary rank of Lieutenant (junior grade), Jan. 5-9. Examination will be held at the Naval Hospitals at Chelsea, Mass., Newport, R. I., Brooklyn, Philadelphia, Norfolk, Va., Charleston, S. C., Pensacola, Fla., Corpus Christi, Tex., San Diego and Mare Island, Calif., Puget Sound, Wash., Great Lakes, Ill., Pearl Harbor, T. H., and Naval Medical Center, Washington, D. C. Apply, Rear Admiral Ross T. McIntire, M.D., Surgeon General U. S. Navy, Washington, D. C.

NATIONAL BOARD OF MEDICAL EXAMINERS
EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, October 4, page 1209.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, June 16-18. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ARKANSAS: * *Medical.* Little Rock, Nov. 6-7. Sec., Dr. D. L. Owens, Harrison. *Eclectic.* Little Rock, Nov. 6. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Oral examination* (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California), Los Angeles, Dec. 10. *Written.* Sacramento, Oct. 20-23. Sec., Dr. Charles B. Pinkham, 1020 N St., Sacramento.

CONNECTICUT:* *Medical. Examination.* Hartford, Nov. 11-12. *Endorsement.* Hartford, Nov. 25. Sec., Dr. Creighton Barker, 258 Church St., New Haven. *Homeopathic.* Derby, Nov. 11-12. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven.

DELAWARE: Dover, July 14-16. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: * Washington, Nov. 10-11. Sec., Dr. George C. Ruhland, 6150 East Municipal Bldg., Washington.

FLORIDA: * Jacksonville, Nov. 24-25. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, Oct. 14-15. Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

HAWAII: Honolulu, Jan. 12-15. Sec., Dr. James A. Morgan, 48 Young Bldg., Honolulu.

ILLINOIS: Chicago, Oct. 14-16. Supt. of Registration, Mr. Lucien A. File, Department of Registration and Education, Springfield.

INDIANA: Indianapolis, June 16-18. Sec., Board of Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis.

KANSAS: Topeka, Dec. 9-10. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. 7th St., Kansas City.

KENTUCKY: Louisville, Dec. 8-10. Sec., Dr. A. T. McCormack, 620 S. Third St., Louisville.

MAINE: Portland, Nov. 12-13. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 129 State St., Portland.

MARYLAND: *Medical.* Baltimore, Dec. 9-12. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Homeopathic.* Baltimore, Dec. 9-10. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, Nov. 4-7. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413-F State House, Boston.

MICHIGAN: * Lansing, Oct. 15-17. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 203 Hollister Bldg., Lansing.

MINNESOTA: * Minneapolis, Oct. 21-23. Sec., Dr. J. F. Du Bois, 230 Lowry Medical Arts Bldg., St. Paul.

MISSISSIPPI: *Reciprocity.* Jackson, December. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MISSOURI: Kansas City, Oct. 29-31. Sec., State Board of Health, Dr. James Stewart, State Capitol Bldg., Jefferson City.

NEVADA: *Reciprocity with oral examination,* Nov. 3. Final date for filing application is Oct. 20. Sec., Dr. Fred M. Anderson, 315 N. Carson St., Carson City.

NEW JERSEY: Trenton, Oct. 21-22. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 13-14. Sec., Dr. Le Grand Ward, 135 Sena Plaza, Santa Fe.

NORTH CAROLINA: *Endorsement.* December. Sec., Dr. W. D. James, Hamlet.

NORTH DAKOTA: Grand Forks, Jan. 6-9. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OKLAHOMA: * *Reciprocity.* Oklahoma City, Dec. 10. Sec., Dr. James D. Osborn, Jr., Frederick.

OREGON: *Reciprocity.* Portland, Oct. 18. *Examination.* Portland, January. Exec. Sec., Miss Lorienne M. Conlee, 608 Failing Bldg., Portland.

PENNSYLVANIA: Philadelphia, January. Acting Sec., Bureau of Professional Licensing, Mrs. Marguerite G. Steiner, 358 Education Bldg., Harrisburg.

SOUTH CAROLINA: Columbia, Nov. 10-11. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

SOUTH DAKOTA: * Pierre, Jan. 13-14. Dir., Medical Licensure, Dr. J. F. D. Cook, State Board of Health, Pierre.

TEXAS: Austin, Nov. 17-19. Sec., Dr. T. J. Crowe, 918 Texas Bank Bldg., Dallas.

VERMONT: Burlington, Feb. 10-12. Sec., Board of Medical Registration, Dr. F. J. Lawliss, Richford.

VIRGINIA: Richmond, Dec. 9-12. Sec., Dr. J. W. Preston, 30½ Franklin Road, Roanoke.

WEST VIRGINIA: Charleston, Nov. 17-19. Sec., Public Health Council, Dr. C. F. McClintic, State Capitol, Charleston.

WISCONSIN: * Madison, Jan. 13-15. Sec., Dr. H. W. Shutter, 425 E. Wisconsin Ave., Milwaukee.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

DISTRICT OF COLUMBIA: Washington, Oct. 20-21. Sec., Dr. George C. Ruhland, 6150 East Municipal Bldg., Washington.

FLORIDA: DeLand, Nov. 1. Final date for filing application is Oct. 17. Sec., Professor J. F. Conn, John B. Stetson University, DeLand.

IOWA: Des Moines, Oct. 14. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

MICHIGAN: February. Sec., Miss Flora E. Dube, East Lansing.

OREGON: Portland, Nov. 1. Final date for filing application is Oct. 15. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

RHODE ISLAND: Providence, Nov. 19. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: Aberdeen, Dec. 5-6. Sec., Dr. G. M. Evans, Yankton.

Mississippi June Report

The Mississippi State Board of Health reports the written examination for medical licensure held at Jackson, June 25-26, 1941. The examination covered 12 subjects. An average of 75 per cent was required to pass. Thirty-eight candidates were examined, all of whom passed. Seventeen physicians were licensed to practice medicine by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
Emory University School of Medicine		(1941)	1
Northwestern University Medical School		(1941)*	1
Louisiana State University School of Medicine		(1941, 4)	4
Tulane University of Louisiana School of Medicine		(1941, 13)	13
Johns Hopkins University School of Medicine		(1941)	1
Washington University School of Medicine		(1941)	1
University of Tennessee College of Medicine		(1935), (1940, 8), (1941, 7)	16
Vanderbilt University School of Medicine		(1941)	1

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Colorado School of Medicine		(1940)	Colorado
Tulane University of Louisiana School of Medicine		(1920), (1936), (1937, 2)	Louisiana
Creighton University School of Medicine		(1933)	Oklahoma, (1939) Louisiana
Long Island College Hospital		(1898)	New York
Eclectic Medical College, Cincinnati		(1906)	W. Virginia
Medical College of the State of South Carolina		(1935)	S. Carolina
Univ. of Tennessee College of Med.		(1936), (1939), (1940)	Tennessee
Vanderbilt University School of Medicine		(1933)	Alabama
Baylor University College of Medicine		(1940)	Texas
University of Texas School of Medicine		(1937)	Texas
Medical College of Virginia		(1916)	W. Virginia

* This applicant has received the M.B. degree and will receive the M.D. degree on completion of internship. License has not been issued.

Michigan Indorsement Report

The Michigan State Board of Registration in Medicine reports 58 physicians licensed to practice medicine by indorsement from January 1 through July 1. The following schools were represented:

School	LICENSED BY INDORSEMENT	Year Grad.	Indorsement of
University of Arkansas School of Medicine		(1935)	Arkansas
University of Colorado School of Medicine		(1940)	Colorado
Yale University School of Medicine		(1926)	Maine
Georgetown University College of Medicine		(1938)	Maine
Howard University College of Medicine		(1939)	Illinois
Northwestern University Medical School		(1927), (1939, 2) (1938)	Illinois, North Dakota, Ohio
Rush Medical College		(1935)	Ohio, (1940) Illinois
The School of Medicine of the Division of the Biological Sciences		(1937), (1938, 2)	Illinois, (1938) Wisconsin
University of Illinois College of Medicine		(1938), (1940)	Illinois
Indiana University School of Medicine		(1932), (1936), (1940, 2)	Indiana
University of Louisville School of Medicine		(1939, 2)	Kentucky
Louisiana State University School of Medicine		(1938)	Louisiana
Johns Hopkins University School of Medicine		(1936), (1937), (1939, 2)	Maryland
Harvard Medical School		(1937)	California
University of Minnesota Medical School		(1930), (1937), (1939)	Minnesota
University of Nebraska College of Medicine		(1939)	Nebraska
Ohio State University College of Medicine		(1935), (1939)	Ohio
University of Cincinnati College of Medicine		(1935), (1938), (1941, 2)	Ohio
Western Reserve University School of Medicine		(1931), (1933)	Ohio.
Hahnemann Medical College and Hospital of Philadelphia		(1936)	New Jersey
Jefferson Medical College of Philadelphia		(1935)	Penna.
Temple University School of Medicine		(1918), (1938)	Penna.
University of Pennsylvania School of Medicine		(1934)	Indiana
Woman's Medical College of Pennsylvania		(1939)	California
Meharry Medical College		(1936), (1939)	Tennessee
University of Tennessee College of Medicine		(1939, 2)	Tennessee
Baylor University College of Medicine		(1939)	Texas
University of Texas School of Medicine		(1937)	Texas
University of Wisconsin Medical School		(1939, 2) (1940)	Wisconsin, Colorado
University of Western Ontario Medical School		(1936)	Ohio

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Hospitals for Profit: When General Allegations of Negligence Are Sufficient.—The plaintiff brought suit against the Hollywood Hospital and several physicians, alleging that he was a patient in the defendant hospital for about six weeks for the performance of a "kidney operation" and necessary after-care, that sometime during his stay, just when he did not know, his "second floater rib" was broken through the negligence of the defendants and that the defendants failed to render him any care for the broken rib. This failure to treat him for the broken rib, he alleged, was occasioned either by a wilful and wanton refusal to care for him or because the defendants were not aware of the fact that the rib was broken. The trial court sustained general and special demurrers interposed by the hospital to the complaint on the ground that the complaint did not state a cause of action, and the plaintiff appealed to the district court of appeal, second district, division 1, California, which affirmed the judgment of the trial court. *Guilliams* v. *Holiywood Hospital,* 105 P. (2d) 318. The plaintiff then appealed to the Supreme Court of California, which in the reported decision considered the propriety of the trial court's action only with respect to the liability of the hospital.

The demurrers interposed by the hospital were based apparently on the theory that the complaint was fatally defective because it failed to specify the manner in which the plaintiff's rib was broken or the acts of the hospital which were responsible for the injury. The Supreme Court thought, however, that the general demurrer at least should not have been sustained because a valid cause of action may be stated by alleging negligence in general terms without detailing the specific manner in which the injury occurred. There are, of course, said the Supreme Court, limitations to the generality with which a plaintiff is permitted to state his cause of action. Ordinarily while negligence may be pleaded in general terms, the plaintiff must indicate the acts or omissions which he alleges to have been negligently performed. He may not recover on the bare statement that the defendant's negligence has caused him injury. The defendant contended that the complaint in the instant case failed to state a cause of action because the plaintiff did not specify any acts or omissions but attempted to state merely that he was injured by the defendant's negligence. The hospital argued that such a general allegation exceeds the permissible limits of generality. It should be recognized, answered the Supreme Court, however, that the particularity with which a plaintiff must state his cause of action depends to some extent on the circumstances and the situation of the parties. Even under the strict rules of common law pleading this principle is recognized. As was said by this court in *Stephenson* v. *Southern Pac. Co.,* 102 Cal. 143, 34 P. 618, 36 P. 407:

> In adopting what is known as the "code system of pleading," courts . . . have so far modified the rule as to permit the plaintiff to state the negligence in general terms, without stating the facts constituting such negligence. This modification . . . grows out of a fundamental rule in common-law pleading, to the effect that "no greater particularity is required than the nature of the thing pleaded will conveniently admit" (Steph. Pl. 367) supported by that other rule that "less particularity is required when the facts lie more in the knowledge of the opposite party" ([Steph. Pl.] 370).

In the Stephenson case the court further pointed out that the plaintiff frequently may know only the general cause of the injury and may be entirely ignorant as to the specific acts or omissions which led up to it. Under these principles, continued the court, the complaint in this case cannot be held fatally defective. The plaintiff has alleged that the defendant so negligently and carelessly attended to him prior to and during the operation that his rib was broken. He alleges further that the defendant failed to discover the broken rib, which should have been discovered in the exercise of ordinary skill, or that, having discovered it, the defendant negligently failed to render any care or treatment for the broken rib. While this language is very general, it sets forth acts and omissions of the defendant hospital and classifies both as negligent in character. Either type of negligent conduct is sufficient to support the plaintiff's cause of action. Furthermore, the plaintiff has set forth "what was done" with as much particularity as he can, considering the nature of his cause of action and his condition when the injury is alleged to have occurred. So far as the rules of pleading are concerned, there is no requirement that he identify and allege the precise moment of the injury or the exact nature of the wrongful act. These are matters of evidence, and in situations in which an instrumentality under the defendant's control causes the injury, the plaintiff may be aided in the trial by the doctrine of res ipsa loquitur, which requires the defendant to come forward with an explanation. As the plaintiff suggests, the evidence at a trial may show that the attendants dropped him off the carriage while moving him from the operating room, or that they were insufficient in number or inadequately trained to do their work, or that they used defective apparatus furnished by the hospital, or that they ignored his complaints. These matters are mentioned solely to clarify the distinction between the requirements of pleading and of proof. The particularity of the evidence required to sustain the plaintiff's cause of action at the trial is immaterial in considering the sufficiency of the complaint as against a general demurrer. The trial court was in error, therefore, in the opinion of the Supreme Court, to hold that the complaint did not state a cause of action against the defendant hospital.

The hospital next contended that the allegations in the complaint concerning negligent failure to discover the broken rib or wilful failure to render care and treatment therefor cannot state a cause of action because the discovery and treatment of the condition would constitute the practice of medicine by a corporation in violation of the California medical practice act. But, answered the Supreme Court, the allegations of the complaint in this respect cannot be construed as setting forth an agreement whereby the hospital, as a corporation, undertook for a fee to furnish medical diagnosis and treatment. The complaint charges only what is common practice, that the hospital agreed to care for the patient in the usual manner, that is, to furnish him with accommodations and to maintain such attendants, including nurses and interns, as would assure him proper care and attention before, during and after the operation. Under such circumstances it cannot be said that the hospital is practicing medicine in violation of law.

The judgment in favor of the hospital was accordingly reversed and the cause remanded.—*Guilliams v. Hollywood Hospital, 114 P. (2d) 1 (Calif., 1941).*

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Chicago, Oct. 19-23. Dr. William P. Wherry, 107 South 17th St., Omaha, Executive Secretary.

American Clinical and Climatological Association, Skytop, Pa., Oct. 16-18. Dr. Francis M. Rackemann, 263 Beacon St., Boston, Secretary.

American College of Surgeons, Boston, Nov. 3-7. Dr. Frederic A. Besley, 40 East Erie St., Chicago, Secretary.

American Public Health Association, Atlantic City, N. J., Oct. 14-17. Dr. Reginald M. Atwater, 50 West 50th St., New York, Executive Secretary.

American Society of Tropical Medicine, St. Louis, Nov. 11-14. Dr. E. Harold Hinman, Wilson Dam, Ala., Secretary.

Associated Anesthetists of the United States and Canada, Boston, Nov. 3-7. Dr. C. J. Wells, 1932 S. Salina St., Syracuse, N. Y., Secretary.

Association of American Medical Colleges, Richmond, Va., Oct. 27-29. Dr. Fred C. Zapffe, 5 South Wabash Ave., Chicago, Secretary.

Association of Military Surgeons of the United States, Louisville, Ky., Oct. 29-Nov. 1. Colonel James M. Phalen, Army Medical Museum, Washington, D. C., Secretary.

Central Society for Clinical Research, Chicago, Nov. 7-8. Dr. Carl V. Moore, Washington University School of Medicine, St. Louis, Secretary.

Inter-State Postgraduate Medical Association of North America, Minneapolis, Oct. 13-17. Dr. Tom B. Throckmorton, 406 Sixth Ave., Des Moines, Iowa, Secretary.

Omaha Mid-West Clinical Society, Omaha, Oct. 27-31. Dr. J. D. McCarthy, 1036 Medical Arts Bldg., Omaha, Secretary.

Radiological Society of North America, San Francisco, Dec. 1-5. Dr. Donald S. Childs, 607 Medical Arts Bldg., Syracuse, N. Y., Secretary.

Society for the Study of Asthma and Allied Conditions, New York, Dec. 6. Dr. W. C. Spain, 116 East 53d St., New York, Secretary.

Southern Medical Association, St. Louis, Nov. 10-13. Mr. C. P. Loranz, Empire Bldg., Birmingham, Ala., Secretary.

Western Surgical Association, St. Paul, Dec. 5-6. Dr. Arthur R. Metz, 2449 Washington Blvd., Chicago, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1931 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

22:1-140 (July) 1941

*Syndrome of Painful Disability of Shoulder and Hand Complicating Coronary Occlusion. J. M. Askey, Los Angeles.—p. 1.
Physiologic Action of Oxygen and Carbon Dioxide on Coronary Circulation as Shown by Blood Gas and Electrocardiographic Studies. A. L. Barach and A. Steiner, with technical assistance of M. Eckman and N. Molomut, New York.—p. 13.
Duration of Electrical Systole (QT Interval) in Cases of Massive Pericardial Effusion. C.-L. Tung, Peiping, China.—p. 35.
Auricular Fibrillation in Normal, Intact Animals After Intravenous Injection of Mecholyl (Acetyl-β-Methylcholine). A. Iglauer, D. Davis and M. D. Altschule, Boston.—p. 47.
*Cor Pulmonale: Observations in Fifty Autopsy Cases. R. W. Scott and C. F. Garvin, Cleveland.—p. 56.
Occurrence in Angina Pectoris of Electrocardiographic Changes Similar in Magnitude and in Kind to Those Produced by Myocardial Infarction. F. N. Wilson and F. D. Johnston, Ann Arbor, Mich.—p. 64.
*Lumbar Sympathectomy in Treatment of Selected Cases of Peripheral Arteriosclerotic Disease. L. N. Atlas, Cleveland.—p. 75.
Effect of Diffuse Pericarditis on Electrocardiographic Pattern of Recent Myocardial Infarction. R. Langendorf, Chicago.—p. 86.
Frequency of Electrocardiographic Variations in Normal, Unanesthetized Dogs. J. Lalich, L. Cohen and G. Walker, Kansas City, Kan.—p. 105.
Incidence of Rheumatic and Congenital Heart Disease Among School Children of Louisville, Ky. M. M. Weiss, Louisville, Ky.—p. 112.
Observations on Production of Myocardial Disease with Acetylcholine. R. G. Horswell, Boston.—p. 116.
Deproteinated Pancreatic Extract (Depropanex): II. Effect of Intravenous Administration in Rabbits. M. S. Schwartz, M. M. Fisher, I. S. Wright and A. W. Duryee, New York.—p. 122.
Comparison of Leads 4 R and 4 F. I. M. Liebow and E. H. Cushing, Cleveland.—p. 125.

Disability of Shoulder and Hand in Coronary Occlusion.—Askey describes a syndrome of painful disability of the shoulder and hand which persists from several months to two years after coronary occlusion. It seems to be precipitated by coronary occlusion, as only 6 of 18 patients had had any previous pain of the upper extremity and in them the pain was definitely increased by the cardiac attack. The author feels that the syndrome is not a rare sequela of coronary occlusion. He does not refer to the pain of the left arm and hand after a paroxysm of angina pectoris but to a persistent, painful disability which restricts movement of the shoulder and causes swelling of the fingers. He has encountered 22 patients with this syndrome. The diagnosis of coronary occlusion was made in 18 and confirmed by an electrocardiogram in 15. In the other 4 there was a long-standing diagnosis of angina pectoris. In these 4 there had been an unusually severe attack prior to the development of the syndrome, and an unrecognized occlusion may have occurred. Several of the 18 had had repeated occlusions. The sequence of events seemed to be myocardial ischemia, cardiac pain, shoulder pain and, later, hand pain. The hand disability, although it persisted in many cases for two years, was not characteristic of long-standing rheumatoid arthritis or osteoarthritis. The muscle atrophy of the one and the Heberden's nodes of the other were absent, and the condition of the hands gradually improved rather than becoming worse. The shoulder pain was similar to that of periarthritis. An accompanying cervical neuralgia was suggested in the author's cases by the apparent sensitization of cervical plexus nerves and by the relief that some of the patients obtained from pressure. He believes that the difference in the syndromes, after coronary occlusion, of shoulder pain without restricted movement, shoulder pain with restricted movement and shoulder pain and hand involvement is probably one of degree and probably depends on the intensity of the cardiac afferent stimulus, the degree of joint involvement and the sensitivity of the patient. The process is self limited; it is little affected by any type of therapy. It seems to be the result of sympathetic nerve disturbance caused by myocardial ischemia and preexisting arthritic lesions of the shoulder and hand.

Cor Pulmonale.—Scott and Garvin report postmortem studies of 50 cases of cor pulmonale. The series occurred among 6,548 consecutive necropsies, among which 790 deaths occurred from heart disease. The most noteworthy clinical features were the relatively short duration and progressive nature of the symptoms of right ventricular failure and the fact that 43 patients died of their first attack of heart failure. The majority were more than 50 years of age. Of the 32 in whom pulmonary emphysema was the major disease, 1 patient was 35 years of age, 10 patients were between 40 and 50, 12 were between 50 and 60, and 9 were more than 60. Only 2 of them were women; 32 of the 50 were foreign born, most of them in southeastern Europe. The postmortem observations support the conclusions of older clinicians and pathologists regarding the relation between chronic emphysema and failure of the right side of the heart. All but 4 of the 50 patients had emphysema alone or complicated by bronchiectasis, tuberculosis, silicosis or silicotuberculosis. The lungs were normal in 2, 1 had conglomerate silicosis and 1 had extensive fibrosis. The weights of the hearts varied between 250 and 720 Gm.; the approximate average was 457 Gm. The thickness of the 50 right ventricles varied from 5 to 14 mm., and that of the left from 10 to 20 mm. The clinical course and postmortem observations indicate that the right ventricle is burdened in emphysema, presumably by an elevated pulmonary pressure, and that it undergoes dilatation and hypertrophy and ultimately fails. This is shown clearly by 2 cases in which an aneurysm at the root of the aorta compressed the main pulmonary artery. In most cases the left ventricle also was hypertrophic, but its cause was not apparent. However, as the anatomic relation of the two ventricles is so intimate, hypertrophy of one chamber probably ultimately involves the other.

Peripheral Arteriosclerotic Disease.—Atlas believes that sympathetic vasoconstrictor tone constitutes a barrier to the medical treatment of peripheral arteriosclerosis. He cites a case to illustrate the possible outcome if the sympathetic vasoconstrictor tone is not eliminated surgically. In this patient suffering from intermittent claudication, with pain and severe subjective coldness of his right foot, three months of intravenous injections of hypertonic saline solution, short wave diathermy, treatment with the intermittent venous occlusion cuff twice a week, warm leg baths daily, Buerger's exercises and whisky gave no relief. A lumbar sympathectomy was advised but the patient refused. Two years later advanced color changes, with atrophy of the skin and subcutaneous tissue of the foot, appeared. The pain was very severe. The condition progressed to massive gangrene of the foot requiring amputation. The author has since performed twenty lumbar sympathectomies in cases of this kind. Twelve of the patients have been observed for a year or longer. Following operation the patients received no further therapy except routine care of the feet or the local treatment of ulceration. Clinically they had a collateral vascular network that was not incapable of hypertrophy and in which the small vessel bed had retained its flexibility. Relief of symptoms (persistent coldness, numbness and paresthesias), speed of healing of ulcerations, relief of intermittent claudication and increase in the vascular reserve through hypertrophy of a collateral circulation when vasoconstrictor tone is removed surgically may be expected.

American Journal of Clinical Pathology, Baltimore

11:549-624 (July) 1941

Bacteriophage Service in Staphylococcic Infections. W. J. MacNeal, Frances C. Frisbee and Margaret A. McRae, New York.—p. 549.
Erythrocyte Sedimentation Test. M. M. Wintrobe, Baltimore.—p. 562.
Observations on Blood Sedimentation Mechanism. J. R. Morrison, Kansas City, Kan.—p. 578.
Diagnostic Methods in Chronic Ulcerative Colitis: Critical Analysis of Procedures Used in Differential Diagnosis of Diarrheas and Dysenteries. M. Paulson, Baltimore.—p. 588.
Carcinoma of Tail of Pancreas and Diabetes. M. E. Sano, Philadelphia.—p. 605.
Agglutinating Properties of Antibrucella Rabbit Serums. B. Wise, Durham, N. C.—p. 617.

American Journal of Medical Sciences, Philadelphia

202:157-312 (Aug.) 1941

Effect of Age on Susceptibility of Erythrocyte to Hypotonic Salt Solutions: Radioactive Iron as Means of Tagging Red Blood Cell. W. O. Cruz, P. F. Hahn, W. F. Bale and W. M. Balfour, Rochester, N. Y. —p. 157.

Erythrocyte Fragility Changes Produced by Sulfanilamide. W. Antopol, L. Goldman, Newark, N. J., and W. L. Sampson, Rahway, N. J.—p. 163.

Pernicious Anemia Complicated by Myelogenous Leukemia. E. H. Sterne Jr., H. Schiro and W. Molle, Cincinnati.—p. 167.

*Hematologic Changes Following Splenectomy in Man, with Particular Reference to Target Cells, Hemolytic Index and Lysolecithin. K. Singer, E. B. Miller and W. Dameshek, Boston.—p. 171.

*Hemophilus Influenzae Type A Endocarditis. H. M. Rose, New York. —p. 187.

Critical Rates in Ventricular Conduction: Unstable Bundle Branch Block. H. Vesell, New York.—p. 198.

Subacute Bacterial Endocarditis on Right Ventricular Wall Opposite Ventricular Septum Defect. L. A. Eigen, West Orange, N. J., and A. R. Abel, Orange, N. J.—p. 207.

Intracranial and Peripheral Vascular Effects of Nicotinic Acid. J. Loman, M. Rinkel and A. Myerson, Boston.—p. 211.

Vasomotor Disturbances in Peripheral Neuritis. R. W. Wilkins and L. C. Kolb, Baltimore.—p. 216.

Blood and Urine Chlorides in Twenty-Two Cases with Diabetes Insipidus. H. Blotner, Boston.—p. 222.

Adsorption of Surface-Active Substances of Urines, with Special Reference to Malignant Neoplasia. K. Stern, New York.—p. 229.

Carcinoma of Papilla of Vater: Clinical Features in Forty Cases. W. S. Sharpe and M. W. Comfort, Rochester, Minn.—p. 238.

Analysis of Diabetic Morbidity and Mortality in a General Hospital. H. Pollack, H. Dolger and M. Ellenberg, New York.—p. 246.

*Incidence of Trichinosis in New York City. H. Most and M. Helpern, New York.—p. 251.

Negative Therapeutic and Metabolic Effects of Synthetic Alpha-Tocopherol (Vitamin E) in Muscular Dystrophy. M. M. Harris, New York.—p. 258.

*Addison's Disease: Treatment and Prognosis. H. P. Hampton and E. J. Kepler, Rochester, Minn.—p. 264.

Hematologic Changes Following Splenectomy.—According to Singer and his colleagues, their hematologic study of 19 splenectomized patients supports the concept that one or more splenic hormones exist and confirms the frequently expressed view that the spleen aids in blood destruction. Howell-Jolly bodies in erythrocytes were a constant finding after splenectomy, and target cells—abnormally thin erythrocytes—were usually present. The presence of the latter and the thinness of the erythrocytes adequately account for the increased hypotonic resistance usually seen and confirm previous work showing that the spleen makes erythrocytes thicker and more fragile to hypotonic saline solutions. A lowered urobilinogen output in feces was usually found after splenectomy, indicating a diminution in hemoglobin destruction. Lysolecithin metabolism was definitely altered after splenectomy. Bergenhem and Fåhraeus believe that this normal serum lysin is produced in the spleen. Leukocytosis and thrombocytosis were common and with the presence of the Howell-Jolly bodies suggest that splenectomy probably removes certain normal inhibitory mechanisms of the spleen on the bone marrow. The observations indicate that the spleen has direct effects on the erythrocytes which traverse its sinusoids and indirect effects on the hemopoietic cells of the bone marrow.

Hemophilus Influenzae Type A Endocarditis.—Rose reports the first case of bacterial endocarditis caused by typical Hemophilus influenzae. The clinical course and pathologic changes did not differ significantly from those observed in subacute bacterial endocarditis caused either by Hemophilus parainfluenzae or Streptococcus viridans. The infection apparently originated in the maxillary sinus, with subsequent implantation on a congenitally anomalous aortic valve. This was followed by a prolonged fever, repeated embolism, splenic infarction and terminal acute myocardial insufficiency. Toward the end of the illness polymorphonuclear leukocytosis developed and was accompanied by signs suggestive of thrombosis of the superior vena cava. At necropsy no thrombosis could be demonstrated, and the absence of pulmonary edema and the evidence of passive congestion of the liver and spleen indicate that these changes were due primarily to extreme right heart failure. The myocardium presented numerous areas of recent degeneration and scarring, but there was less embolization of the coronary arteries than reported for Strep. viridans endocarditis. The localization of the bacterial infection on the bicuspid aortic valve adds emphasis to the well established fact that antecedent injuries or congenital abnormalities of the heart valves are a sine qua non in subacute bacterial endocarditis, whatever the infecting agent. The illness lasted approximately five months and its course was typically subacute. Sulfanilamide had no effect on the prognosis. Until further evidence is had the classification of influenzal endocarditis must remain bacteriologic, as thus far no striking differences between true influenzal and parainfluenzal infection are known.

Incidence of Trichinosis in New York City.—Most and Helpern endeavored to discover the incidence of human infection with Trichinella spiralis in New York City by using the digestion, press and microscopic methods on parts of the bodies of 100 persons dying by violence or suddenly. An infection of 22 per cent was found, suggesting that human trichinosis in New York City is considerable and beyond that clinically appreciated or recognized. The authors believed the digestion of large amounts of muscle, preferably the diaphragm, to be the most feasible and reliable method for determining infection in man. The method will detect the largest number of positive cases in contrast to other methods, especially if the infection is light. The relative efficacy of detecting positive cases of infection by the three methods employed was in the ratio of 21 to 11 to 8, respectively. Without the digestion method the incidence determined would have been 12 per cent.

Addison's Disease.—Hampton and Kepler present data on 110 cases of Addison's disease seen at the Mayo Clinic between October 1933 and January 1941. There was evidence in 37 of tuberculosis of the lungs, bones, kidneys, genitals or cervical lymph nodes. Atrophy of adrenal tissue was the likely etiologic factor in most of the remaining 73 cases. Of the 110 cases, an associated disease that might have influenced mortality and morbidity was present in 41. The 19 patients who refused to adhere to the low potassium diet after they left the hospital, although they continued to take sodium chloride, sodium citrate and varying amounts of adrenal cortex extract, comprise a fairly satisfactory control group. Of the group following a low potassium diet, 88 per cent lived more than one year and 40 per cent lived more than four years after beginning treatment. Of the control group, 53 per cent lived more than one year and 18 per cent were alive at the end of four years. Of 23 patients who died while adhering to the low potassium diet, 11 died in crises. The other 12 deaths occurred because of an associated complication which probably may not have been fatal if Addison's disease was not present also. The authors know of 18 patients who are still being sustained by the low potassium diet, sodium chloride and sodium citrate; only 3 of them require adrenal cortex extract regularly and the others use it during periods of stress or illness. Of these 18 patients, 8 are able to work regularly at their occupations, 2 work regularly except during extremely hot weather, 7 work part time and 1 is unable to work. Fourteen patients who had been maintained on the low potassium diet were subsequently given daily hypodermic injections of desoxycorticosterone acetate, and the low potassium diet was discontinued. Following this change their health improved so that all but 2 are able to carry on normal activities. A low potassium diet, high intake of sodium salts and desoxycorticosterone acetate given to 9 patients did not produce good results. Only 1 patient remained well. In 2 diarrhea and other symptoms suggestive of impending crisis occurred. These symptoms disappeared in 1 after desoxycorticosterone acetate and in the other 1 after the low potassium diet were discontinued. Five of the other 6 patients died within two and 1 within six months after beginning treatment. All of these deaths occurred before the danger of the concurrent use of a low potassium diet, a high sodium intake and desoxycorticosterone acetate was known. Consequently treatment was modified so that each patient given desoxycorticosterone acetate also had a diet that contained an amount of potassium equal to that of an average diet. Since these changes were instituted, 32 patients have been treated. Thus far only 1 fatality has occurred. Sixteen of the 31 patients now being treated with desoxycorticosterone acetate are able to work every day and state that they feel well, 10 are able to work most of the time and 5 are able to work occasionally. All the patients are instructed to take from 2 to 5 Gm. of table salt daily. The daily hypodermic dose of desoxycorticosterone acetate varies from 2 to 5 mg. If the patient is unable to eat and the daily intake of potassium falls below 4 or 5 Gm., potassium chloride tablets should be taken.

American Journal of Ophthalmology, Cincinnati

24:611-730 (June) 1941

Lens Opacities Associated with Experimental Calcium Deficiency: Preliminary Report. K. C. Swan and P. W. Salit, Iowa City.—p. 611.
Partial Coloboma of Scleral-Limbus Zone with Visible Schlemm's Canal. K. W. Ascher, Cincinnati.—p. 615.
Fifty Years' Experience in Ocular Motility: Part II. W. B. Lancaster, Hanover, N. H.—p. 619.
Sterilization of Sharp Instruments by Chemical Solutions. M. H. Post, St. Louis.—p. 624.
Antibacterial Action of Tears on Staphylococci. R. Thompson and E. Gallardo, New York.—p. 635.
Practical Comments on Refraction. R. O'Connor, San Francisco.—p. 640.
Experimental Acute Iridocyclitis in Rabbits Produced by Coliform Bacteria Isolated from Upper Respiratory Tract of Man. C. Berens and Edith L. Nilson, New York—p. 645.
Keratitis Due to Mumps. R. W. Danielson and J. C. Long, Denver.—p. 655.
Late Developments in Case of Gyrate Atrophy of Choroid and Retina (Fuchs). H. H. McGuire and W. P. McGuire, Winchester, Va.—p. 657.
Psammoma of Orbit. W. E. Fry and P. DeLong, Philadelphia.—p. 664.
Rare Form of Glaucoma. S. J. Beach and E. E. Holt Jr., Portland, Maine.—p. 668.
Boeck's Sarcoid of Lacrimal Gland, with Bilateral Iridocyclitis. H. R. Sniderman, Toronto, Canada.—p. 675.
Attempt to Produce Dinitrophenol Cataracts in Hypothyroid Rats. G. K. Smelser, New York.—p. 680.
Streptothricosis of Lacrimal Canaliculi: Report of Nine Cases. A. J. Elliot, New York.—p. 682.

American Journal of Pathology, Boston

17:469-642 (July) 1941

Visceral Lesions in Infectious Polyneuritis (Infectious Neuronitis, Acute Polyneuritis with Facial Diplegia, Guillain-Barré Syndrome, Landry's Paralysis). A. B. Sabin and C. D. Aring, Cincinnati.—p. 469.
Metastatic Tumors of Myocardium: Review of Sixteen Cases. G. Ritchie, Madison, Wis.—p. 483.
Lobular Carcinoma in Situ: Rare Form of Mammary Cancer. F. W. Foote Jr. and F. W. Stewart, New York.—p. 491.
Histogenesis of Ewing's Tumor. F. W. Foote Jr., New York, and H. B. Anderson, Johnstown, Pa.—p. 497.
Endothelial Myeloma (Ewing's Tumor of Bone). V. V. Gharpure, Bombay, India.—p. 503.
Effect of Pituitary Growth Hormone on Epiphysial Disk of Tibia of Rat. R. D. Ray, H. M. Evans and H. Becks, San Francisco.—p. 509.
Changes in Incisor Teeth of Albino Rats with Vitamin A Deficiency and Effects of Replacement Therapy. I. Schour, M. M. Hoffman, Chicago, and M. C. Smith, Tucson, Ariz.—p. 529.
Occurrence of Mitotic Divisions in Glomeruli in Glomerulonephritis and Malignant Sclerosis. P. H. Hartz, A. van der Sar and A. van Meeteren, Curacao, Netherland West Indies.—p. 563.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

46:1-144 (July) 1941

Tomography of Larynx. R. M. Caulk, Washington, D. C.—p. 1.
Treatment of Laryngeal Cancer by Irradiation. D. Quick, New York.—p. 11.
Causes of Failure of Roentgen Therapy in Cancer of Larynx. M. Lenz, New York.—p. 21.
Cancer of Larynx: Surgical Treatment. L. A. Schall, Boston.—p. 30.
Difficulties in Differentiating Midbrain Lesions from Cerebellar Lesions. H. O. Peterson and A. B. Baker, Minneapolis.—p. 37.
Chest Roentgenograms in Polycythemia Vera and Polycythemia Secondary to Pulmonary Arteriosclerosis. P. J. Hodes and J. Q. Griffith, Philadelphia.—p. 52.
*Localized Subacute Phlegmonous Gastritis (So-Called Botryomycosis) Simulating Pyloric Carcinoma. A. Vass and D. M. Sirca, Springfield, Ill.—p. 59.
Pancreatic Lithiasis. E. E. Smith and A. Bonis, New York.—p. 64.
*Tumors in One of Homologous Twins: Hodgkin's Disease; Osteogenic Sarcoma. H. Charache, Brooklyn.—p. 69.
Swallowing of Miscellaneous Objects: Some Cases. E. de Bernardi, Trieste, Italy.—p. 75.
End Results in Irradiated Hodgkin's Disease. F. W. O'Brien, Boston.—p. 80.
Effects of Roentgen Ray Dosage in Breast Carcinoma. A. Beach, San Antonio, Texas.—p. 89.
Effect of Roentgen Therapy on Infections Produced in Skin of Rabbits with Cultures of Streptococcus Hemolyticus and Staphylococcus Aureus. D. M. Angevine and A. Tubble, New York.—p. 96.

Localized Subacute Phlegmonous Gastritis.—Vass and Sirca report an instance of primary localized phlegmonous gastritis which resembled so-called botryomycosis in a white woman aged 54. Roentgenologically the lesion could not be differentiated from an annular carcinoma of the pylorus, and microscopically it consisted of granulation tissue with abscesses in which so-called botryomycotic granules, consisting of coalescent tissue and staphylococci, were found. Within one month the pyloric end of the stomach, which at first showed a moderate and fairly well localized rigidity of the wall without any filling defects or gross irregularity, presented definite thickening of the wall and almost complete occlusion of the lumen. The mucosal pattern was faintly visible during the first roentgen examination and was completely obliterated at the second examination. The mucosal pattern could not be demonstrated, probably because the affected portion of the stomach did not fill at the time of the second examination and the mucosal folds were obliterated by the swelling of the wall. The authors believe chronic hypertrophic gastritis, which was present, to be the cause of the lesion.

Tumors in One of Homologous Twins.—Charache presents histories of three pairs of homologous twins in which only 1 of each pair was affected; only 1 twin of two pairs had Hodgkin's disease and 1 of the other pair had osteogenic sarcoma. The 3 respective affected twins have died, but the homologous living twins are free from any symptoms and physical signs four years and two months, five and a half years and eight years since the disease was first recognized in the deceased twin.

American Journal of Tropical Medicine, Baltimore

21:507-604 (July) 1941

Studies on Murine Origin of Typhus Epidemics in North China: I. Murine Typhus Rickettsia Isolated from Body Lice in Garments of Sporadic Case. Wei-T'ung Liu and S. H. Zia, Peiping, China.—p. 507.
Infection of Anopheles Quadrimaculatus with Plasmodium Cynomolgi, Monkey Malaria Parasite, and with Plasmodium Lophurae, Avian Malaria Parasite. L. T. Coggeshall, New York.—p. 525.
Diagnostic and Epidemiologic Significance of Complement Fixation Test in Human Malaria. I. J. Kligler and M. Yoeli, Jerusalem, Palestine.—p. 531.
Yaws and Syphilis; the Same or Different? Should Discussion Be Continued? E. H. Hudson, Athens, Ohio.—p. 545.
Experimental Malaria Infections in Anopheles Stephensi from Contrasting Sea Water and Tap Water Larva Environments. P. F. Russell, New York, and B. N. Mohan, Guindy, Madras, India.—p. 553.
Observations on Anopheles of British Honduras. H. W. Kumm and L. M. Ram, San José, Costa Rica, Central America.—p. 559.
Problems Encountered in Growth of Endamoeba Histolytica in Cultures Developed by Microisolation. C. W. Rees, Lucy V. Reardon, L. Jacobs and Frances Jones, Washington, D. C.—p. 567.
Comparison of High and Low Subcultures of Yellow Fever Vaccine (17D) in Human Groups. H. H. Smith, H. Calderón-Cuervo and J. P. Leyva, Bogotá, Colombia, South America.—p. 579.
Spherule Formation in Culture by Coccidioides Immitis Rixford and Gilchrist, 1896. E. E. Baker, San Francisco, and E. M. Mrak, Berkeley, Calif.—p. 589.
Vesicular Test: Diagnostic Method of Infection by Poradenic (Lymphogranuloma Inguinale) Virus. C. Ottolina, Caracas, Venezuela, South America.—p. 597.

American Review of Tuberculosis, New York

44:123-254 (Aug.) 1941

Pulmonary Insufficiency: II. Effects of Various Types of Collapse Therapy on Cardiopulmonary Function. A. Cournand and D. W. Richards Jr., New York.—p. 123.
Collapse Therapy in Moderately Advanced Tuberculosis: Inquiry into Case Selection and Statistical Study of End Results. K. M. Soderstrom, Seattle.—p. 173.
Jacobaeus Operation: Plea for Its Early Use in Treatment of Incomplete Collapse. S. A. Thompson, New York, and M. Greenberg, Hillside, N. J.—p. 183.
*Tubercle Bacilli in Cavity Drainage (Monaldi). E. Bogen and W. Dunn, Olive View, Calif.—p. 191.
Relation of Sex to Course of Experimental Tuberculosis in Mice. E. R. Long and Agnes Beebe Vogt, Philadelphia.—p. 196.
*Frequency of Tuberculous Lesions at Autopsy: Some Epidemiologic Inferences. K. E. Landé, Hagerstown, Md., and G. Wolff.—p. 223.
Pulmonary Histoplasmosis: Report of Two Cases. H. E. Meleney, Nashville, Tenn.—p. 240.

Tubercle Bacilli in Cavity Drainage.—Bogen and Dunn examined all of the material aspirated from 17 tuberculous cavities by the Monaldi method of transthoracic puncture and prolonged suction drainage. They compared their observations with those of the sputum obtained from the same patients. Tubercle bacilli diminished or disappeared from the aspirated specimens in many cases. Physiologic, pathologic and bacteriologic factors which may contribute to this result include mechanical removal of bacteria and other cavity contents, intercellular lavage by induced transudation, increase in the hydrogen ion concentration and changes in the composition of the gaseous milieu.

Frequency of Tuberculosis.—Landé and Wolff looked for tuberculous lesions among 165 necropsies of persons who died of various diseases. The incidence of positive observations

among 128 necropsies of adults more than 20 years of age amounted to 62, or 48.4 per cent. The childhood frequency was small, with no tuberculous manifestation in infancy and an incidence of only 3 positive observations among the 37 necropsies of patients from birth to 19 years of age, a percentage of 8.1. On the basis of these statistics it may be assumed that the number of infected and pathologically marked persons has been greatly reduced from about 100 per cent at the turn of the century to around 50 per cent at present among the unselected hospital population. If this reduction can be substantiated in larger population groups it would confirm the success of preventive medicine and public health activity in the fight against tuberculosis. If the still greater fatality decrease during the same period from around 200 at the beginning of the century to around 50 per hundred thousand in the last years is considered, the percentage decrease of tuberculosis mortality is twice as high as the reduction of infected people. Therefore it may be assumed that the infected proportion of the population exhibits a considerable diminution of tuberculosis mortality. It seems probable that the risk of an infected person to die from tuberculosis has been reduced from 2-2.8:1,000 to 1-1.4:1,000 at present. This also might be interpreted as representing the results of therapy, improvement of social conditions and possibly a change involved in tuberculosis epidemiology. The decrease in tuberculosis mortality appears to be caused by the reduction of the sources of infection and, to an equal extent, by treatment.

Archives of Neurology and Psychiatry, Chicago

46:197-376 (Aug.) 1941

Analysis of 100 Cases of Schizophrenia with Recovery. T. A. C. Rennie, with assistance of J. B. Fowler, Baltimore.—p. 197.
Fiber Connections of Corpus Striatum as Seen in Marchi Preparations. S. W. Ranson, S. W. Ranson Jr. and Mary Ranson, Chicago.—p. 230.
Acute Postoperative Aseptic Leptomeningitis: Review of Cases and Discussion of Pathogenesis. A. I. Finlayson, Rochester, Minn., and W. Penfield, Montreal, Canada.—p. 250.
Pathologic and Mental Alterations in Case of Simmonds' Disease. R. C. Wadsworth and Clementine McKeon, Boston.—p. 277.
Displacement and Herniation of Hippocampal Gyrus Through Incisura Tentorii: Clinicopathologic Study. G. A. Schwarz, Philadelphia, and A. A. Rosner, New York.—p. 297.
Influence of Locomotion on Plantar Reflex in Normal and in Physically and Mentally Inferior Persons: Theoretical and Practical Implications. P. I. Yakovlev and M. J. Farrell, Waverley, Mass.—p. 322.
Patterns of Cerebral Integration Indicated by Scotomas of Migraine. K. S. Lashley, Cambridge, Mass.—p. 331.
Anosognosia and Autopagnosia. C. W. Olsen and C. Ruby, Los Angeles. —p. 340.

Archives of Surgery, Chicago

43:169-326 (Aug.) 1941

*Problem of Anoxia in Surgery and Anesthesia: Report of Experimental and Clinical Cases and Review of Literature. J. G. Schnedorf, P. H. Lorhan and T. G. Orr, Kansas City, Kan.—p. 169.
Early Carcinoma of Colon: I. Nature and Adequate Treatment of Small Carcinomas. J. A. Bargen, C. D. L. Cromar and C. F. Dixon, Rochester, Minn.—p. 186.
Id.: II. Relation Between Subclinical Inflammatory Processes and Carcinoma. J. A. Bargen, D. L. Cromar and C. F. Dixon, Rochester, Minn.—p. 192.
Studies on Prostatic Cancer: II. Effects of Castration on Advanced Carcinoma of Prostate Gland. C. Huggins, R. E. Stevens Jr. and C. V. Hodges, Chicago.—p. 209.
*Recurrence of Hyperthyroidism. E. B. Eckerson, New York.—p. 224.
*Cephalin-Cholesterol Flocculation Test in Cases of Disease of Liver, with Special Reference to Diagnosis of Mild and Unsuspected Forms. D. H. Rosenberg, Chicago.—p. 231.
Role of Adrenal Glands in Shock: Value of Desoxycorticosterone Acetate in Prevention of Operative Shock. E. L. Besser, Iowa City. —p. 249.
Squamous Cell Carcinoma Arising in Chronic Osteomyelitic Sinus Tract with Metastasis. E. S. Bereston, Baltimore, and C. Ney, New York. —p. 257.
Pancreatic Fistula: Clinical and Experimental Observations. J. M. McCaughan and H. K. Purcell, St. Louis.—p. 269.
Sympathetic Nervous System in Neurogenic and Renal Hypertension: Experimental Correlation and Clinical Consideration. K. S. Grimson, Chicago.—p. 284.
Review of Urologic Surgery. A. J. Scholl, Los Angeles; F. Hinman, San Francisco; A. von Lichtenberg, Mexico, D. F., Mexico; A. B. Hepler, Seattle; R. Gutierrez, New York; G. J. Thompson. J. T. Priestley, Rochester, Minn.; E. Wildbolz, Berne, Switzerland, and V. J. O'Conor, Chicago.—p. 306.

Anoxia in Surgery and Anesthesia.—Schnedorf and his associates report 2 deaths due to anoxia and 2 instances of cerebral degeneration due to anoxia produced in dogs. Their first patient was suffering from chronic anemic anoxemia because of a low level of hemoglobin (31 per cent) on admission to the hospital. He had shown some mental aberration before admission. These changes were probably due to the profound anemic anoxemia. Anoxia at the time of operation resulted from several contributory factors: preoperative medication with pentobarbital sodium, morphine sulfate and scopolamine hydrobromide, spinal anesthesia, pulmonary edema and increased permeability of capillaries. Thus all types of anoxemia played a part in the cerebral anoxia and death of this patient. The anoxic conditions of the patient were reproduced in 2 dogs. A fall in blood pressure to 40 mm. of mercury was produced by trauma to a hindlimb. The spinal anesthetic produced flaccid paralysis of the hind extremities and of the abdomen, but the dogs exhibited running movements with their forelegs. The animals were killed in thirty-six hours, when they were dying. Microscopic sections of the cerebral cortex showed degenerative changes similar to but milder than those observed in the patient. That the changes were less extensive was probably due to the shorter survival period of the animals and to the absence of anemia. The authors' other patient died from cerebral anoxia incidental to ether anesthesia. The anoxia which caused restlessness, twitchings and convulsions was made worse by the administration of chloral hydrate. The authors used cyanosis as a criterion for anoxemia in both of their patients. However, anoxemia is present long before cyanosis becomes visible and cyanosis can be present without anoxemia. Cyanosis depends on the presence of about 5 Gm. of reduced hemoglobin for each hundred cubic centimeters of circulating blood. An anemic patient with less than this amount of hemoglobin cannot usually become cyanotic until he is dying, but a patient with polycythemia and a hemoglobin content of 19 Gm. may well have 5 Gm. of reduced hemoglobin per hundred cubic centimeters and show cyanosis but not have anoxemia.

Recurrence of Hyperthyroidism.—Eckerson suggests that the primary reason for the postoperative persistence or recurrence of hyperthyroidism is that subtotal thyroidectomy attacks only a manifestation of the disease. It is surprising that recurrence is not more frequent, as patients with hyperthyroidism have an inferior basic nervous equipment. In most cases recurrence of symptoms within one year or later is probably caused by the removal of too little thyroid tissue, too large remnants of the lateral lobes may have been left, the isthmus may not have been touched, a pyramidal lobe may have been left or an intrathoracic portion of a nodular goiter may have been overlooked. Recurrence and persistence usually occur with the diffuse or hyperplastic type of toxic goiter. Social or economic problems, nervous shocks, endocrine adjustments and foci of infection can all be factors in inciting recurrent hyperthyroidism. Among 469 patients with toxic thyroids operated on between 1930 and 1939 inclusive there were 34 recurrences. During the first five years 224 patients were operated on; in 8 of these the disease persisted and in 13 it recurred, these 21 patients had the diffuse type of goiter. Among these 224 patients there were 5 operative deaths. Two hundred and two were followed for from one to six years. Two of the patients died of other causes within one to two years. Of the 224 patients operated on during this five year period 114 have been followed for from five to ten years. Of the 21 with recurrent or persistent hyperthyroidism, 16 have been followed continually, 1 until his death, and 4 were lost to follow-up within three years after their second attack of hyperthyroidism. A total of 21 recurrences has been noted for the 114 completely followed-up patients. This makes an incidence of 18.4 per cent. The treatment of persistent and recurrent hyperthyroidism depends on the individual patient and on the severity of the disease. It consists of iodine, roentgen therapy and surgical intervention or a combination of these, and rehabilitation by the social service department.

Cephalin-Cholesterol Flocculation Test.—Rosenberg determined the reliability of the cephalin flocculation test in revealing active hepatic damage. The results obtained in 155 selected patients (34 with irrefutable clinical evidence of hepatic disease, 38 with signs and symptoms suggesting mild chronic hepatic disorders and 72 whose routine histories and physical examinations revealed no evidence of such disease) are presented. The reaction was positive in the serum of all patients with acute hepatitis, cirrhosis and chronic passive congestion of

the liver. In the serum of patients with hepatic carcinoma it seemed to be related to the extent of the malignant involvement. Clinical improvement was accompanied with a decrease in the flocculation reaction. Of the patients with obstructive jaundice, flocculation reactions were negative in the serums of only 2 and slight in most of the others. The flocculation test may be of distinct value in differentiating obstructive from parenchymatous jaundice. Either a negative or a slightly positive reaction suggests the obstructive form, and the strongly positive reactions early in the course of jaundice suggest the parenchymatous form. A form of postarsphenamine jaundice, recently described by Hanger and Gutman, giving a negative flocculation reaction is believed to be due to intrahepatic biliary obstruction rather than to parenchymatous changes. The flocculation tests of the 38 patients clinically suspected of having hepatic disease were all positive. In 33 the diagnosis was confirmed by other means, and in 5 presumptive clinical evidence had been elicited. Of the 72 subjects of the third group, 12 were "normal" adults and 60 were patients with miscellaneous diseases. Forty-three gave positive flocculation reactions. In 25 of these one or more supplementary tests of hepatic function revealed abnormalities, and in 3 others confirmatory evidence of disease of the liver was found at operation, necropsy or biopsy. Five of the 28 in whom the disease was established had regarded themselves as normal, healthy adults. A bromsulphalein test was performed in 21, the excretion was normal in 6 and the hippuric acid test was normal in 8 of 16. Of the remaining 15 patients with positive flocculation reactions for whom adequate confirmatory studies could not be made, further clinical study revealed a history of dyspepsia in 2, hepatic tenderness or enlargement in 4, sulfanilamide (20 Gm.) therapy in 1, hyperthyroidism in 3, ulcerative colitis in 1, glomerulonephritis in 2, infectious mononucleosis in 1 and pernicious anemia with involvement of the cord in 1. These data indicate that mild and subclinical disease of the liver is much more common than is generally appreciated or clinically recognized. Early diagnosis is of utmost importance, for only in its early stage can appropriate therapy successfully arrest the pathologic process and restore normal function.

Canadian Public Health Journal, Toronto

32:339-386 (July) 1941

Venereal Disease Control. G. Bates, Toronto.—p. 339.
Health Survey of Rural Manitoba Youth. C. G. Sheps, Winnipeg, Man. —p. 350.
Value of Food Inspection and Properly Trained Food Inspectors. A. J. Slack, London, Ont.—p. 357.
Errors in Calculation of Nutritive Value of Food Intake: I. Comparison of Calculated and Determined Amounts of Calories, Protein and Fat. J. M. Patterson and E. W. McHenry, Toronto.—p. 362.

Cancer Research, Philadelphia

1:439-516 (June) 1941

Effects of Estrogen on Mammary Gland of Mice Injected During Pregnancy, Lactation and Retrogression. L. Loeb and V. Suntzeff, St. Louis.—p. 439.
Incidence of Mammary Gland Carcinoma and Cancer Age in Mice Injected with Estrogen and in Noninjected Mice of Different Strains. V. Suntzeff, M. M. Kirtz, H. T. Blumenthal and L. Loeb, St. Louis. —p. 446.
Tumor Inhibition Associated with Secretory Changes Produced by Estrogen in Transplanted Mammary Adenocarcinoma of Rat. M. J. Eisen, New York.—p. 457.
Inhibition of Phospholipid Oxidation by Carcinogenic and Related Compounds. H. P. Rusch and B. E. Kline, Madison, Wis.—p. 465.
Effect of Heptyl Aldehyde-Sodium Bisulfite on Spontaneous Tumors of Mammary Gland in Mice. L. C. Strong, New Haven, Conn.—p. 473.
Further Investigation of Induced Tumors in Fowls. J. B. Murphy and E. Sturm, New York.—p. 477.
Studies on Changes in Lymphoid Tissue of Mice Treated with Carcinogenic and Noncarcinogenic Hydrocarbons. Cornelia Hoch-Ligeti, London, England.—p. 484.
Experimental Tumors in Lymph Nodes and in Endocrine and Salivary Glands. C. C. Franseen, J. C. Aub and Carol L. Simpson, Boston.—p. 489.
Studies on Transplantable Embryoma of Mouse. Elizabeth B. Jackson and A. M. Brues, Boston.—p. 494.
Persistence of Growth Inhibition in Young Rats Induced by 1, 2, 5, 6-Dibenzanthracene. H. Alapy, Budapest, Hungary.—p. 499.
Growth Rates of Nine Inbred Strains of Mice. Alma Howard, Montreal, Canada.—p. 503.

Connecticut State Medical Journal, Hartford

5:555-632 (Aug.) 1941

Multiple Aneurysms of Splenic, Gastric, Renal and Superior Mesenteric Arteries. D. F. Levy, New Haven.—p. 567.
Swimming Places and Public Health. W. J. Scott, Hartford.—p. 570.

Delaware State Medical Journal, Wilmington

13:143-158 (July) 1941

Significance of Precordial Pain. G. C. Griffith, Philadelphia.—p. 143.
Compound Presentation Complicated by Sacculation of Lower Uterine Segment. J. S. Keyser and I. Slovin, Wilmington.—p. 149.

Journal of Clin. Endocrinology, Springfield, Ill.

1:461-546 (June) 1941. **Partial Index**

Estrogen and Progestin Metabolism in Pregnancy: I. Spontaneous and Induced Labor. O. W. Smith, G. Van S. Smith and Sara Schiller, Brookline, Mass.—p. 461.
Hormone Therapy and Sex Hormone Excretion: I. Effect of Progesterone and Gonadotropic Hormone of Mare's Serum on Excretion of Estrogens, Androgens and Sodium Pregnandiol Glucuronidate by Women During Normal and Abnormal Menstrual Cycles. L. T. Samuels, Nora Winther and Naomi Yolton, Minneapolis.—p. 485.
Stilbestrol: Clinical Effect of Stilbestrol on Postpartum Activity of Mammary Glands. A. W. Diddle and W. C. Keettel Jr., Iowa City. —p. 494.
Methyl Testosterone: I. Androgenic Effects and Production of Gynecomastia and Oligospermia. E. P. McCullagh and H. R. Rossmiller, Cleveland.—p. 496.
Gynecomastia: Hypertrophy of Male Breast. M. L. Lewin, New York. —p. 511.
Thyroid and Growth: Effect of Thyroid Hormone on Growth in Thyrotoxic and Myxedematous Children and Adolescents. S. Hertz and C. Galli-Mainini, Boston.—p. 518.
Thyrogonadal Interrelationships: Clinical Studies of Thyrogonadal Correlates: I. Basal Metabolic Rates and Endometrial Responses. E. C. Hamblen, R. L. Pullen and W. K. Cuyler, Durham, N. C.—p. 523.
Hypothyroidism: Umbilical Hernia of Infantile Myxedema. W. A. Reilly, San Francisco.—p. 532.
Diabetes Mellitus: Use of Anterior Pituitary Extracts in Uncontrolled Diabetes Mellitus with Growth and Sexual Retardation. J. A. Greene, L. E. January and L. W. Swanson, Iowa City.—p. 538.

1:547-620 (July) 1941

Progesterone: Value of Basal Fat in Human Uterus as Indicator of Optimal Progesterone Activity. J. Black, O. S. Heyns and J. Gillman, Johannesburg, South Africa.—p. 547.
Therapy of Functional Bleeding: Value of Pregneninolone in Treatment of Functional Uterine Bleeding. J. A. Gaines, S. H. Geist and U. J. Salmon, New York.—p. 554.
Ethinyl Estradiol: Therapeutic Effectiveness of Orally Administered Ethinyl Estradiol. U. J. Salmon, S. H. Geist, R. I. Walter and N. Mintz, New York.—p. 556.
Estrogen Therapy: Comparison of Clinical Effectiveness of Estradiol Dipropionate and Estradiol Benzoate. R. R. Greene, Chicago.—p. 559.
Therapy of Functional Bleeding: Use of Testosterone Propionate in Functional Bleeding. W. A. Leff, Newark, N. J.—p. 562.
Dysmenorrhea: Anhydrohydroxy Progesterone in Dysmenorrhea. S. D. Soule, St. Louis.—p. 567.
*Acne: Male Hormone Substance: Prime Factor in Acne. J. B. Hamilton, New Haven, Conn.—p. 570.
Nonhypogonadal Impotence: Treatment of a Case of Impotence with a Combination of Pituitary Gonadotropin and Testosterone. H. Freeman, Worcester, Mass.—p. 593.
Hyperinsulinism: Spontaneous and Artificial Hyperinsulinism. F. M. Allen, New York.—p. 595.
Diabetes: Lack of Perimetric Evidence for Pituitary Hypertrophy in Diabetes. L. L. Mayer, C. D. Strouse and S. Soskin, Chicago.—p. 604.
Diabetes: Attempt to Demonstrate "Anti-Insulin" Effect of Blood Plasma of Certain Diabetic Types. E. S. Gais and E. A. Weinbaum, New York.—p. 607.
Obesity: Calorigenic Action of Thyroid Substance in Obese Patients. M. B. Handelsman and M. B. Gordon, New York.—p. 612.

Acne and Androgen.—Hamilton discusses the relationship of androgen in experimentally induced and normally appearing acne in men, women and children. Thirty-one boys from 2 to 17 years of age were examined for comedones and cutaneous eruptions before, during and after the administration of androgen as trial therapy for certain types of cryptorchism. Injections of peanut oil were given as control observations. Eight eunuchoid and castrate men from 18 and 45 years of age were also given mock treatment and were later treated with active male hormone substance. Some patients have been observed for more than three years. Two ovariectomized women were studied following intramuscular administration of 20 mg. of testosterone propionate three times a week for from three to seven weeks. Both were in their fourth decade and had undergone ovariectomy one and two years, respectively, prior to treatment. Prior to treatment quantitative determinations were made of urinary estrogenic, androgenic and gonadotropic substances. The

severity of an acneform response was judged by the presence, number, size and color of comedones and papules. Resumption of androgen therapy after a brief period of withdrawal caused papules that had undergone regression on cessation of therapy to take on color. This refers also to newly produced and reactivated eruptions. Eunuchoid individuals who did not mature sexually never had acne. When testosterone propionate was administered to eunuchoid and castrate men, to prepuberal boys and to ovariectomized women, comedones, papules and pustules developed in some of them. When such treatment was terminated the acneform responses diminished and began to disappear. Additional courses of medication at later dates were accompanied by similar responses with subsequent disappearance of the lesions during the intervals when testosterone compounds were not being given. A close relationship of the acne to male hormone treatment is attested by the rapidity with which the lesions faded when androgenic therapy was discontinued and by the fact that a regressing papule again became inflamed if treatment was resumed. The lesions are like those found at puberty. Therefore stimulation of sebaceous secretions and possibly some degree of acne of adolescence are probably not due to a "deranged metabolism" or to an "endocrine dyscrasia" but to sequelae of sexual maturation. Acne occurred in most but not all patients receiving adequate hormone therapy. The most severe eruptions were observed in a man with a history of severe acne as an adolescent. The severity of the eruption varied with the time elapsed since the sebaceous glands were stimulated and with the duration and regularity of androgenic therapy. Androgen may be involved in clinical conditions accompanied by acne; acne of puberty, adrenal virilism and arrhenoblastomas. It is suggested that the stimulation of sebaceous secretions and the adjustment between follicular secretion and excretion are primary factors in the production of acneform lesions. Sexual hormones may also, perhaps, bear a relation to furuncular folliculitis in adolescence. The fact that androgen may induce acne in susceptible individuals is not proof that it is the sole cause of acne. Other factors and an "innate predisposition to acne" (as evidenced by identical twins) are undoubtedly of great importance.

Journal of Clinical Investigation, New York

20:333-466 (July) 1941. **Partial Index**

Measurement of Sensitivity of Smallest Blood Vessels in Human Skin: Responses to Graded Mechanical Stimulation in Normal Men. J. R. Di Palma, S. R. M. Reynolds and Frances I. Foster, Brooklyn.—p. 333.

Blood Iodine in Patients with Thyroid Disease. D. S. Riggs, E. F. Gildea, E. B. Man and J. P. Peters, New Haven, Conn.—p. 345.

Lung Volume Under Surgical Anesthesia: Effect of Avertin on Subtidal Air. G. E. Lindskog and A. D. Spicer, New Haven, Conn.—p. 355.

Relation of High and Low Urea Clearances to Inulin and Creatinine Clearances in Children with Nephrotic Syndrome. K. Emerson Jr., P. H. Futcher and L. E. Farr, New York.—p. 361.

Studies on Chemical Diagnosis of Pellagra (Nicotinic Acid Deficiency). H. Field Jr., D. Melnick, W. D. Robinson and C. F. Wilkinson Jr., Ann Arbor, Mich.—p. 379.

Metabolism, Toxicity and Manner of Action of Gold Compounds Used in Treatment of Arthritis. R. H. Freyberg, W. D. Block and S. Levy, Ann Arbor, Mich.—p. 401.

Liver Lipids and Their Distribution in Disease: Analysis of Sixty Human Livers. Elaine P. Ralli, K. Paley and S. H. Rubin, New York.—p. 413.

Studies on Blood Histamine in Patients with Allergy: II. Alterations in Blood Histamine in Patients with Allergic Disease. B. Rose, Montreal, Canada.—p. 419.

Magnesium Partition Studies in Graves' Disease and in Clinical and Experimental Hypothyroidism. L. J. Soffer, C. Cohn, E. B. Grossman, Mildred Jacobs and H. Sobotka, New York.—p. 429.

Journal of Nervous and Mental Disease, New York

93:561-700 (May) 1941

Fulfilment of White's Purpose. F. A. Fenning, Washington, D. C.—p. 561.

Agenesis of Corpus Callosum: Report of Case with Neuropsychiatric, Psychologic, Electroencephalographic and Pneumoencephalographic Studies. L. N. Goldensohn, E. R. Clardy and Kate Levine, Orangeburg, N. Y.—p. 567.

Psychogenic Body Image Disturbances Associated with Psychogenic Aphasia and Agnosia. H. A. Teitelbaum, Baltimore.—p. 581.

Hutchinson Teeth Without Congenital Syphilis. L. Kerschbaumer, St. Peter, Minn.—p. 613.

Comparative Study of Recovered and Deteriorated Schizophrenic Patients. O. Kant, Worcester, Mass.—p. 616.

Journal of Neurophysiology, Springfield, Ill.

4:287-330 (June) 1941

"Motor" Cortex of Chimpanzee. J. G. Dusser de Barenne, H. W. Garol and W. S. McCulloch, New Haven, Conn.—p. 287.

Functional Interdependence of Sensory Cortex and Thalamus. J. G. Dusser de Barenne and W. S. McCulloch, New Haven, Conn.—p. 304.

Suppression of Motor Response Obtained from Area 4 by Stimulation of Area 4s. J. G. Dusser de Barenne and W. S. McCulloch, New Haven, Conn.—p. 311.

Functional Organization of Sensory and Adjacent Cortex of Monkey. J. G. Dusser de Barenne, H. W. Garol and W. S. McCulloch, New Haven, Conn.—p. 324.

4:331-426 (July) 1941

Cerebral Blood Flow and p_H in Excessive Cortical Discharge Induced by Metrazol and Electrical Stimulation. H. Jasper and T. C. Erickson, Montreal, Canada.—p. 333.

Relation Between Electrical Changes During Nerve Activity and Concentration of Choline Esterase. D. Nachmansohn, New Haven, Conn., and B. Meyerhof, Woods Hole, Mass.—p. 348.

Nature of "Endplate Potential" in Curarized Muscle. J. C. Eccles, B. Katz and S. W. Kuffler, Sydney, Australia.—p. 362.

Isolation of Intrinsic and Motor Mechanism of Monkey's Spinal Cord. Sarah Tower, D. Bodian and H. Howe, Baltimore.—p. 388.

Fibrillation in Skeletal Muscle in Relation to Denervation and to Inactivation Without Denervation. Sarah Tower, H. Howe and D. Bodian, Baltimore.—p. 398.

Initiation of Muscle Impulses at Neuromuscular Junction. J. C. Eccles and S. W. Kuffler, Sydney, Australia.—p. 402.

Human Electrocorticogram: Report of Spontaneous Electrical Potentials Obtained from Exposed Human Brain. J. E. Scarff and W. E. Rahm Jr., New York.—p. 418.

New England Journal of Medicine, Boston

225:125-170 (July 24) 1941

*Arnold-Chiari Malformation: Diagnosis, Demonstration by Intraspinal Lipiodol and Successful Surgical Treatment. R. D. Adams, R. Shatzki and W. B. Scoville, Boston.—p. 125.

*Chrome Ulcerations of Nose and Throat. H. Lieberman, Worcester, Mass.—p. 132.

Microcytic, Hypochromic Anemia, Associated with Splenomegaly and Refractory to Treatment: Report of Case. L. P. Eliel and T. B. Bayles, Boston.—p. 134.

Treatment of Degenerative Joint Disease. C. L. Short and W. Bauer, Boston.—p. 145.

Arnold-Chiari Malformation.—Adams and his co-workers report 2 cases of Arnold-Chiari malformation; in 1 there was no meningomyelocele. Clinically the patients had similar symptoms falling respectively into five types: increased intracranial pressure, cranial nerve involvement, brain stem compression, spinal cord compression and cerebellar signs. The following symptoms were manifested in each: (1) occipital headaches, vomiting, nausea and papilledema, (2) disturbances pointing to bilateral lesions of the seventh, ninth, third, tenth and twelfth cranial nerves, (3) disturbances of conjugate movements of the eyes and vertical nystagmus, (4) bilateral pyramidal tract signs and (5) gait disturbance, tremor and incoordination of movement. Some degree of platybasia is often found in the Arnold-Chiari syndrome; in all probability it is an associated congenital anomaly of the skull. Lumbar puncture and myelography were of diagnostic aid. Lumbar puncture showed a complete block in the dynamics of cerebrospinal fluid. The protein of spinal fluid was increased. The intraspinal injection of iodized oil gives an almost diagnostic picture; it outlines the bifid projection of the two herniated cerebellar hemispheres. Most operations on such patients have been unsuccessful. The patient often fails to regain consciousness or dies suddenly during convalescence, presumably from compression of the medulla. Probably the cervical spinal cord and cerebellum should be decompressed and no attempt should be made to liberate the nerve structures in the posterior fossa from the arachnoidal adhesions. Any manipulation that causes a sudden change in the spatial relations of these structures may lead to death. Both of the authors' patients survived the operation, even though more than a simple decompression was done, and continued to improve for the eighteen and six months that they were followed. Preoperative ventricular drainage was not attempted.

Chrome Ulcerations of Nose and Throat.—Lieberman examined 4 men and 1 woman employed in a chromium-plating plant. Working conditions in this plant were poor; the atmosphere contained a high concentration of fumes of chromic acid. The symptoms of the patients when working over the chromate tanks consisted of an immediate attack of sneezing associated

with epiphora and a profuse watery nasal discharge. Continued close contact produced labored breathing and a choking sensation. Dizziness, weakness and dull headaches were common. After two or three months of employment nasal and postnasal discharges were thick. Heavy crusts, at times blood stained, were frequently expelled when the patients blew their noses. Two patients complained of a swollen sensation of the tongue and mouth associated with burning, soreness and dryness. The woman noticed an impairment in the sense of taste, causing all foods to taste like rubber. If food was eaten on the premises, nausea and vomiting occurred. The 5 patients had previously worked in another chromium-plating establishment, where the ventilation was adequate, and none had had any trouble. Now ulcers of various sizes and depths were present on one or both sides of the nasal septum of the 5 workers. The ulcerations were limited to the cartilaginous portion. In 3 they were relatively superficial, in 1 the perichondrium had been destroyed and the erosion exposed bare normal cartilage and in 1 there was a complete perforation measuring 6 by 4 mm. The buccal mucous membrane of the cheeks of the patient complaining of impaired taste was thickened and had a milky sheen. In 2 patients multiple small ulcers with sharply demarcated edges were present on the soft palate, the posterior surface of the tongue and the floor of the mouth. The ulcers were covered with a whitish pseudomembrane, which wiped off easily and did not bleed. Smears were negative for spirochetes and fusiform bacilli. The dorsum of the tongue was coated, dry and cracked, and many of the papillas were enlarged and red. All the patients at one time or another had suffered with "chrome holes" of the skin of the hands. These cutaneous ulcers required between four and eight weeks to heal. Local treatment consisted in cleansing the nose and postnasal space with a weak bicarbonate solution. A bland ointment was applied to the affected parts and sniffed into the nose morning and night, thus protecting the injured parts while regeneration took place. Chrome ulceration in the chromium-plating trade can be prevented by mechanical devices for the removal of generated fumes and hygienic measures among the workers. Workmen should be examined periodically and those showing signs of chrome poisoning should be suspended from work until the lesions heal.

New Jersey Medical Society Journal, Trenton

38:343-386 (July) 1941

Regional Ileitis. H. Reich and M. Danzis, Newark.—p. 347.
The Doctor as a Prescription Writer. A. P. Leighton, Portland, Maine. —p. 351.
Congenital Dextrocardia With or Without Situs Inversus Viscerum. M. Gross, Atlantic City.—p. 354.
Pneumonia—New Phase. C. V. Craster and H. Simon, Newark.—p. 362.
Health Needs Among the New Jersey Youth: Preliminary Report. D. Bergsma, Trenton.—p. 367.
Anesthesia as Cause of Obstetric Death in Essex County. A. Meurlin, East Orange.—p. 369.

New York State Journal of Medicine, New York

41:1411-1506 (July 15) 1941

Veterinary Food Inspection. O. E. McKim, Great Bend.—p. 1433.
Epidemiology of Food-Borne Diseases of Gastrointestinal Tract. J. E. Perkins, Albany.—p. 1438.
Laboratory Aids in Diagnosis and Control of Enteric Diseases. A. H. Harris and M. B. Coleman, Albany.—p. 1444.
Treatment of Food-Borne Diseases of Gastrointestinal Tract. Z. Bercovitz, New York.—p. 1450.
Role of Gastroenterology in American Military Medicine. J. L. Kantor, New York.—p. 1458.
Present Status of Vitamins in Nervous Health and Disease. H. Wortis and N. Jolliffe, New York.—p. 1461.
Feeding the German Army. M. Gerson, New York.—p. 1471.

Northwest Medicine, Seattle

40:227-264 (July) 1941

Interstitial Cystitis. O. A. Nelson and C. J. Pinard Jr., Seattle.—p. 230.
Coxa Plana. D. B. Slocum, Eugene, Ore.—p. 233.
Primary Suture of Large Bowel. D. Metheny, Seattle.—p. 239.
Electric Ophthalmia. W. M. Whitehead and W. P. Blanton, Juneau, Alaska.—p. 241.
Trochanteric Fractures of Femur. W. B. McKibbin, Seattle.—p. 242.
Hyperventilation Syndrome. G. H. Anderson, Spokane, Wash.—p. 243.
Headache: Mechanism and Treatment. J. W. Lynch, Spokane, Wash. —p. 246.
Rupture of Spleen. R. L. Baker, White Salmon, Wash.—p. 250.

Surgery, Gynecology and Obstetrics, Chicago

73:129-272 (Aug.) 1941

Histologic Diagnosis of Early Cervical Carcinoma. R. Meyer, Minneapolis.—p. 129.
Limitations of Roentgen Diagnosis of Fractures. E. Lachman, Oklahoma City.—p. 140.
Treatment of Persistent Recurrent Basal Cell Carcinoma of Face. F. Young, Rochester, N. Y.—p. 152.
*Five Year Survey of Blood Sedimentation Test in Acute Appendicitis. A. Lesser and L. R. Kaufman, New York.—p. 163.
Occurrence of Postoperative Acidosis and Pagetoid Bone Changes in Hyperparathyroidism. J. H. Couch and H. F. Robertson, Toronto, Canada.—p. 165.
Contractile Response of Human Uterus to Posterior Pituitary Extract Administered at Regular Intervals During Pregnancy: Study of Thirty-Two Patients with Lóránd Tocograph. D. P. Murphy, Philadelphia.—p. 175.
Bacterial Content of Air in Operating Rooms. T. B. Rice, L. A. Weed and H. Raidt, Indianapolis.—p. 181.
*Problem of Treatment of Peritonitis: Preliminary Report. C. E. Rea, Minneapolis.—p. 193.
Dermovascular Effects of Estrogen in Women with Menopausal Flushes. S. R. M. Reynolds, S. Kaminester, Frances I. Foster and S. Schloss, Brooklyn.—p. 206.
Diverticular Inguinal Hernia. C. C. Burton and C. Blotner, Dayton, Ohio.—p. 212.
Urinary Extravasation (Periurethral Phlegmon): Pathogenesis and Experimental Study. E. O. Finestone, New York.—p. 218.
New Factors of Clinical Significance in Study of Human Spermatozoa. J. W. Huffman, Chicago.—p. 228.
Reconstruction of Ear. J. Newman, Newark, N. J.—p. 234.
One Stage Operation for Closure of Large Defects of Lower Lip and Chin. H. May, Philadelphia.—p. 236.
Resection of Duodenum and Head of Pancreas for Carcinoma of Ampulla. T. G. Orr, Kansas City, Kan.—p. 240.
Problem of Carcinoma of Cardiac End of Stomach. J. H. Garlock, New York.—p. 244.
Priming Action of Stilbestrol on Gravid Human Uterus. A. R. Abarbanel, New York.—p. 257.
Effect of Cooling Traumatized and Potentially Infected Limbs. R. T. McElvenny, Oak Park, Ill.—p. 263.

Blood Sedimentation Test in Acute Appendicitis.—Lesser and Kaufman discuss the value of the blood sedimentation test in the diagnosis of acute appendicitis. They operated on 132 patients with a preoperative diagnosis of acute appendicitis or with primary pathologic appendical changes. The preoperative diagnoses in 15 cases were erroneous. Operation revealed a pathologic condition other than appendicitis. In these 15 extra-appendical conditions the blood sedimentation readings were consistently elevated or high, as differentiated from the normal ones of acute appendicitis. There were complicating appendical abscesses in 8 and in 10 cases generalizing peritonitis of varying degree and severity was found. In all instances complicated by abdominal abscess or peritonitis a consistently elevated blood sedimentation rate, varying from a high to a severe reaction, was found. In 99 cases operation confirmed the preoperative diagnoses of acute appendicitis; in 90 of these the blood sedimentation rates were 15 mm. or less in the hour and in 9 the blood sedimentation rates were above 15; the readings varied from 21 to 26 mm. in the hour. This deviation from the absolute normal may be explained by minor inaccuracies or deviations from precise detail of technic on the part of a few of the many interns called on to perform the tests. As a result of blood sedimentation readings patients with acute adnexal disease, in which operation is needless and frequently harmful, are submitted to operation less frequently.

Therapy of Peritonitis.—Rea compares the relative efficacy of certain substances in preventing peritonitis in rabbits. Animals that survived for two weeks were not killed to see if they had peritonitis. Animals that died within twenty-four hours after injection of peritonitis culture showed little evidence of peritonitis and probably died of bacteremia. The preventive substances tested were 1 per cent sodium ricinoleate, tincture of merthiolate, 2 per cent mercurochrome, hexylresorcinol, 0.5 and 1 per cent hydrochloric acid, cow serum, colibactragen, immune rabbit serum, amniotic fluid concentrate and sulfanilamide. At best only about a half of the animals could be protected regardless of the agent used. Of the substances used a merthiolated solution of amniotic fluid of cows (amfetin) and colibactragen were no more effective than 1 per cent sodium ricinoleate as far as survival rates were concerned. The results obtained with sulfonamides were impressive but probably no better than those obtained with sodium ricinoleate, colibactragen and the like. Sulfanilamide seemed to be most

effective in the preperitonitis stage. Also the direct application of sulfanilamide appeared more effective than subcutaneous administration or the placing of an equivalent amount of sulfanilamide powder under the skin. If frank purulent peritonitis is present, sulfanilamide not only is of little value because of inactivation by exudate protein but also may aggravate a hepatitis already caused by the peritoneal infection. Clinically sulfathiazole, because it is less toxic, may prove to be more effective. In "clean" cases there is no indication for the use of any preventive agent. In clean incisions of the skin of dogs sulfanilamide affords no higher incidence of healing than that expected by primary intention. In "dirty" or grossly infected wounds sulfanilamide is valueless unless thorough débridement or cleansing is done first. In the few experiments performed, radiation therapy gave little or no protection against peritonitis in rabbits. The use of hyperimmune serum appears of value in preventing peritonitis in rabbits.

Virginia Medical Monthly, Richmond

68:437-496 (Aug.) 1941

Medicine in Peace and War. T. M. Greene, Princeton, N. J.—p. 437.
*Spontaneous Hypoglycemia in Childhood. W. W. Waddell Jr. and T. J. Humphries, University.—p. 440.
Eye Findings in Diabetes. W. W. Taylor, Norfolk.—p. 449.
Pulmonary Hemorrhage in Tuberculosis and Thyloquinone or Vitamin K. C. L. Harrell, Norfolk, and A. C. Ray, Lynnhaven.—p. 451.
Postsanatorium Treatment of Pulmonary Tuberculosis. F. B. Stafford, Charlottesville.—p. 456.
Changes Caused by Cerebellar Neoplasms in Electroencephalogram. C. G. Holland, Charlottesville.—p. 459.
Problem of Psychopathic Personality in the Feebleminded Institution. G. B. Arnold, Colony.—p. 462.
Swallowed Air. S. D. Blackford, Charlottesville.—p. 469.
Pelvimetry and Its Evaluation. J. Bear, Richmond.—p. 472.
Physiopathology of Uncontrolled Diabetes Mellitus. H. A. Hoffman, Washington, D. C.—p. 475.
Leukopenia—Impressions and Review of Case Reports. O. O. Ashworth, Richmond.—p. 479.
Compound Fractures. C. J. Frankel, Charlottesville.—p. 483.

Spontaneous Hypoglycemia in Childhood.—Waddell and Humphries encountered 6 cases of spontaneous hypoglycemia in children within a period of two and a half years in their pediatric service, which is not large, suggesting that the condition is not rare. Looking back over their experience they are confident that other fatal instances of the condition were present but not diagnosed. Failure to recognize and to treat adequately severe and spontaneous hypoglycemia no doubt is the answer to some deaths shown on hospital records as convulsions of unknown cause. The diagnosis of severe hypoglycemia is not difficult and can be made from symptoms and signs alone even by those of limited experience. The diagnosis must be verified, if possible, by fasting blood sugar determinations, five to six hour dextrose and insulin tolerance curves. One should never fail to make blood sugar determinations in any case of unexplained unconsciousness and persistent convulsions. Where the breakdown in carbohydrate metabolism occurs is difficult to determine; perhaps in many instances more than one etiologic factor is operative. Treatment of severe spontaneous hypoglycemia consists in oral and parenteral administration of dextrose and, if proper mobilization of glycogen is not occurring, epinephrine is a valuable adjunct. Response to therapy, when it occurs, is usually prompt and gratifying; the patient frequently regains consciousness within a few minutes. This is not true of all patients; the mere finding of hypoglycemia does not always mean that it is the cause of the presenting symptoms. Pancreatic tumors necessitating operation are rare in children. Before a child with hypoglycemia is subjected to such a procedure the following criteria should be established: proof of more or less persistent or frequently recurring hypoglycemia, relief of symptoms by dextrose intravenously and the inability to relieve symptoms by diet regulation; in recurrent attacks of hypoglycemia with normal intervening intervals, intolerance or hypersensitivity to insulin should be shown. Two of the authors' patients died without showing the usual response to therapy. This emphasizes the occasional serious nature of the condition. An apparent relationship appeared to exist between acute accidental alcohol poisoning and hypoglycemia in 1 of the children.

Yale Journal of Biology and Medicine, New Haven

13:429-562 (March) 1941

Joseph Strong, M.D., Yale 1788: Army Surgeon, Inventor, Practitioner of Physic. L. Barr, New York.—p. 429.
Surgical Production of Collateral Intracranial Circulation: Experimental Study. W. J. German and M. Taffel, New Haven, Conn.—p. 451.
Local Action of Estrone on Mammary Glands of Mice. W. U. Gardner, New Haven, Conn., and T. L. Chamberlin, New York.—p. 461.
Torula Infection. L. J. Wade, New Haven, Conn., and L. D. Stevenson, New York.—p. 467.
Effect of Local Freezing on Electrical Activity of Cerebral Cortex. L. F. Nims, C. Marshall and A. Nielsen, New Haven, Conn.—p. 477.
Chemical Changes in Cerebral Cortex Following Local Thermocoagulation and Local Freezing. C. Marshall, L. F. Nims and W. E. Stone, New Haven, Conn.—p. 485.
Stenosis of Esophagus in Four Generations of Mice of the NH Strain. L. C. Strong and G. M. Smith, New Haven, Conn.—p. 489.
*Potassium Thiocyanate in Treatment of Hypertension. L. F. Blaney, A. J. Geiger, New Haven, Conn., and R. G. Ernst, Hartford, Conn.—p. 493.
Aids for Optical Analysis of Electrophoretic Diagrams. K. G. Stern and D. DuBois, New Haven, Conn.—p. 509.
Studies of Regression in Transplantable Tumor in Mice. H. Bunting, New Haven, Conn.—p. 513.
Effects of Potassium Deficiency on Tumor Bearing Mice. A. A. Liebow, W. J. McFarland and R. Tennant, New Haven, Conn.—p. 523.
Observations on Absorption, Excretion, Diffusion and Acetylation of Sulfadiazine in Man. J. F. Sadusk Jr. and J. B. Tredway, New Haven, Conn.—p. 539.

Potassium Thiocyanate for Hypertension.—After a control period on placebos Blaney and his collaborators used potassium thiocyanate for 20 patients with pronounced arterial hypertension of a duration of from one to ten years. The patients were usually given orally 1 teaspoon of a 4 per cent solution of potassium thiocyanate in syrup of sarsaparilla three times a day. This was equivalent to a daily dose of 0.5 Gm. of the drug and was continued until the concentration of serum thiocyanate was from 8 to 12 mg., as suggested by Barker. Maintenance doses were thereafter adjusted for the individual as indicated by subsequent blood analyses. Periods of thiocyanate and placebo medication, usually for several months, were alternated without the patient's knowledge. This was facilitated by using either a 50 per cent syrup of sarsaparilla or syrup of wild cherry both as a placebo and as a vehicle for the thiocyanate. No other treatment or advice was given, and the patients followed their customary mode of living. The blood pressure of 4 patients dropped to normal during thiocyanate medication and rose again when the drug was withheld. A relatively severe hypertension of 6 patients seemed significantly ameliorated but not completely alleviated during periods of thiocyanate administration; again, the blood pressure rose when the medication was stopped. In 4 patients the blood pressure levels varied considerably, but the relation to thiocyanate medication was not clear. In 6 patients there was no apparent alteration of the blood pressure levels during thiocyanate medication when viewed against proper control periods of observation. Therefore half of the patients appeared to respond to thiocyanate medication with a complete or partial remission of their hypertension. Four patients had no symptoms before, during or after treatment, 8 probably felt improved during thiocyanate therapy (in 4 of these the hypertension was not lowered) and the symptoms of 8 patients were not relieved, although in 3 of them the blood pressure fell appreciably but not to normal. A few patients felt worse during part of the thiocyanate course. It appears that under thiocyanate therapy the probability of symptomatic improvement is greater if the blood pressure falls. No objective evidence of injury from the treatment, as indicated by the renal or cardiac functional status, eyegrounds and electrocardiograms, was encountered in those patients whose hypertension was appreciably diminished. The average daily maintenance dose for the 20 patients approximated 0.5 Gm. of potassium thiocyanate, but individual needs varied from 0.16 to 0.64 Gm. In general, the dosage of patients with impaired renal function was smaller than of patients with apparently normal renal function, but other contributing factors may have existed. Significant hypotensive effects in patients showing complete or partial alleviation of their hypertension were observed occasionally at serum levels as low as 4 and 6 mg. per hundred cubic centimeters, but optimal effects were most commonly associated with concentrations of from 8 to 15 mg. Some of the manifestations attributed to intoxication with thiocyanate salts are lassitude, anorexia, nausea, vertigo and weak-

ness. However, these symptoms were common among the patients in the absence of thiocyanate medication. When only those symptoms which appeared for the first time during thiocyanate therapy are considered, it is found that a macular eruption with pruritus localized to the back occurred once, anemia once (perhaps the result of bleeding hemorrhoids), nausea three times, diarrhea twice, marked ulnar palsy once, pain in the jaws and teeth twice, symptoms of infection of the upper part of the respiratory tract three times and pronounced lassitude and drowsiness four times. These presumably toxic manifestations (with one exception, a concentration of 6.6 mg.) were all associated with serum thiocyanate concentrations between 15.7 and 21 mg. per hundred cubic centimeters. There were numerous occasions when no untoward effects appeared in patients whose serum thiocyanate concentrations at times inadvertently rose to from 15 to 33 mg.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2:1-38 (July 5) 1941

*Treatment of Burns and Wounds by Envelop Method. J. Bunyan.—p. 1.
*Wounds and Burns Treated by Coated Silk Fabric: Report on and Conclusions Drawn from Treatment of Eighty-Two Cases. R. V. Hudson.—p. 7.
Value of Nonspecific Factor in Experimental Immunization with Influenza Virus. J. Ungar and R. F. Hunwicke.—p. 12.
Control of Gastric Hyperacidity in Peptic Ulcer. W. E. Smith.—p. 13.

Treatment of Burns and Wounds by Envelop Method.—Bunyan describes a method of treating burns by means of a watertight coated silk envelop. The envelops have inlets and outlets making it possible to irrigate any part of the body by inserting a glass nozzle into one of the openings. For first aid treatment packs of 1 per cent electrolyte sodium hypochlorite are applied to the burn. First degree burns may be bathed in a 50 per cent solution for ten minutes, after which the concentration is lowered to 10 per cent for ten minutes. The area is dried and is covered with adhesive plaster. A patient with a second or third degree burn is premedicated and anesthetized. If the blisters are unbroken, the area is washed with 20 per cent electrolyte sodium hypochlorite at 100 F. The blisters are then aspirated and some 10 per cent electrolyte sodium hypochlorite injected into them, left in for five minutes, withdrawn by syringe and needle and the skin pressed down flat with a dry dressing. When the skin is broken, necrotic tissue should be cut away under a stream of electrolyte sodium hypochlorite, bathed for ten minutes in a 10 per cent solution, covered with a sheet of the special coated silk and sealed at the edges. After a suitable envelop is applied it is inflated with oxygen and the inlets are sealed. Routine irrigation begins the next day: 5 per cent electrolyte sodium hypochlorite is employed at 100 F. and is run through the envelop over the affected area or areas for twenty minutes. This procedure is carried out three times a day. After irrigation and drainage for half an hour, the envelop is inflated with oxygen. For third degree burns of the extremities a bath is filled with electrolyte sodium hypochlorite solution up to a concentration of 20 per cent. A jet from a Higginson syringe is used to scour-irrigate the affected area. After necrotic skin is removed almost to the margin of the burn, the area should be syringed until spontaneous hemorrhage takes place and the burned area becomes covered with a firm shiny fibrin coagulum. The burned area is then covered with coated silk sheeting, the envelop is slipped over the sheeting, the latter is withdrawn, the normal skin beneath the seal of the envelop is dried with ether methyl, oxygen is run in and the inlets are sealed. Irrigation is maintained three times a day. When the face and head are burned the initial cleansing is done in the usual manner, except that a 10 per cent solution is sprayed on through a vulcanite hose, with the patient's head over a basin. A cylindric envelop with slits for eyes, mouth and nostrils is then applied. If burns of the limbs are complicated by compound fractures they are treated as described and splinting is applied outside the envelop. The method lends itself to treating septic fingers, infected tendon sheaths, cellulitis, osteomyelitis, varicose and trophic ulcerations and dermatitis. The preliminary irrigation rapidly cleans the injured area, the patient feels little or no pain during the irrigation and is usually comfortable afterward, edema is often visibly reduced during the washing, excessive exudation ceases, primary shock is not aggravated, tissue and bacterial toxemia are controlled, the temperature and pulse become normal quickly and lesions heal rapidly. Movement is encouraged. If epithelization is slow, short wave therapy may accelerate it. The new skin over damaged areas, as in third degree burns, is of sound and well vascularized quality. Failure to heal because of secondary infection will not be a factor with the envelop method of treating burns.

Envelop Treatment of Wounds and Burns.—Hudson used the coated silk envelop method of Bunyan for the treatment of 82 wounds or burns showing ulceration and/or infection. The 60 patients whose treatment has been completed had primary and secondary burns, ulcers and gangrene, severe lacerating wounds (including compound fractures) and acute pyogenic lesions. Irrigations for clean wounds were given morning and evening, and for dirty wounds at least three times a day. The average duration of the irrigation was ten minutes, and the temperature a constant 100 F. The strength of the solution was 5 per cent of the 1 per cent stable electrolytic sodium hypochlorite in tap water; this was reduced to 2.5 per cent if the patient had any discomfort or manifested a dermatitis, and as a routine when the wound became clean. Treatment was continued until the wound was healed or ready for primary suture or cutaneous grafting. Strict attention was paid to the treatment of shock, the prophylactic use of sulfanilamide compounds, surgical toilet and constitutional and rehabilitation therapy. Of the 26 cases of ulcer and gangrene treated, all but 1 Meleney ulcer were benefited. A perforated ulcer of the foot of a tabetic patient complicated by cellulitis healed in three weeks. In certain cases of mutilating injuries with ingrained oil and dirt, amputation was avoided and some function preserved by this method. In infected compound fractures with loss of substance, deodorization and practical disinfection, with healing and union, were brought about. When traction was necessary the apparatus was placed inside or outside the envelop. The results of the envelop method in the treatment of 14 instances of acute pyogenic lesions were good. Maceration and edema did not occur. If the drainage was not adequate, the slight drying action of the electrolytic sodium hypochlorite enabled pockets of pus to collect which necessitated further drainage. The author's conclusions bear out those of Bunyan. As an adjunct the sulfonamide drugs orally, parenterally and locally have been of inestimable value. The method appears applicable as a first aid and treatment measure for service, civilian and factory burns and wounds.

Lancet, London

2:1-30 (July 5) 1941

Principle in Raspberry Leaves Which Relaxes Uterine Muscle. J. H. Burn and E. R. Withell.—p. 1.
*Early Results of Prefrontal Leukotomy. E. Lilian Hutton, G. W. T. H. Fleming and F. E. Fox.—p. 3.
*Surgical Treatment of Mental Diseases. J. S. McGregor and J. R. Crumbie.—p. 7.
Sulfathiazole and Sulfapyridine in Acute Gonorrhea. H. B. Jones and R. W. Fairbrother.—p. 9.
Improved Apparatus for Continuous Intravenous Anesthesia. R. R. Macintosh and E. A. Pask.—p. 10.
McArthur Hernioplasty. C. R. McLaughlin.—p. 11.

2:31-60 (July 12) 1941

Somatic Factors Conditioning Air Raid Reactions. H. Crichton-Miller.—p. 31.
Di-Iodotyrosine in Treatment of Graves's Disease. S. H. Wass.—p. 34.
Diabetes Mellitus in Addison's Disease. E. G. G. Rhind and A. Wilson.—p. 37.
Pain in Acute Appendicitis. R. Clarke and M. Shapiro.—p. 39.

Prefrontal Leukotomy.—According to Hutton and her colleagues, prefrontal leukotomy was performed on 8 of their schizophrenic or manic-depressive patients with a bad or hopeless prognosis. Other methods of treatment had been without benefit, so that any improvement following the operation was attributed to it. Only eighteen months have elapsed since the first operation was done, but 2 schizophrenic patients and 1 manic-depressive patient have shown great improvement, 1 manic-depressive patient has shown some improvement, 3 schizo-

phrenic patients have so far shown little improvement and 1 patient died from myocardial fibrositis and atheromatous coronary arteries. Operation was followed by bed wetting in 4 cases; in 3 it has persisted sporadically for some months. The operation appears to be ideal for the patient with suicidal ideas and apprehension.

Surgical Treatment of Mental Diseases.—McGregor and Crumbie performed leukotomy on 4 patients: 1 with melancholia, 2 with schizophrenia and 1 with delusional insanity. Following the surgical intervention the patient with melancholia and 1 with schizophrenia have experienced great mental improvement, the other with schizophrenia is slightly improved and the 1 with delusional insanity was much improved mentally but died from bronchopneumonia on the eleventh postoperative day. The author believes that the method deserves further trial.

Medical Journal of Australia, Sydney

2:1-22 (July 5) 1941

*Acute Hemorrhagic Leukoencephalitis: Previously Undefined Entity. E. W. Hurst.—p. 1.
Pyelography After Subcutaneous Injection of Dye. H. Mortensen.—p. 6.

2:23-48 (July 12) 1941

Mass Radiography of Thorax, with Special Reference to Its Application to Recruits for the Army. B. White.—p. 23.
Mass Radiography of Chest. B. P. A. Stuart.—p. 27.
Changing Scene in Medicine: Van Diemen's Land, 1803 to 1853. W. E. L. H. Crowther.—p. 29.

2:49-72 (July 19) 1941

Studies in Tuberculosis: II. Relative Incidence of Human and Bovine Types of Mycobacterium Tuberculosis in Human Disease in Victoria. R. Webster.—p. 49.
Remarks and Observations on Etiology and Diagnosis of Renal Calculi. A. C. McEachern.—p. 55.

2:73-102 (July 26) 1941

Changes in Lungs in Various Industries. J. G. Edwards.—p. 73.
Pulmonary Tuberculosis and Pregnancy. H. B. Oxenham.—p. 77.
Isolation of New Species of Dysentery Bacillus. S. D. Rubbo.—p. 81.
Reflections on Operative Treatment of Glaucoma. E. T. Smith.—p. 83.

Hemorrhagic Leukoencephalitis.—Hurst discusses an undefined entity that he had encountered in 2 cases and verified post mortem. The disease is an acute cerebral condition termed acute hemorrhagic leukoencephalitis. It is localized in the cerebral white matter and develops more or less abruptly in apparently normal persons. Perivascular necroses, perivascular and focal demyelination, hemorrhages, edema and cellular infiltration were the chief pathologic changes. The principal clinical features were rapid abrogation of the higher cerebral functions in previously healthy persons associated with headache, vomiting, slight pyrexia or leukocytosis. Identical cerebral lesions were found at necropsy of the 2 patients. The highly hemorrhagic and edematous state was localized chiefly in the white matter of the left hemisphere. Subsequent microscopic examination revealed lesions independent of and associated with hemorrhages and edema. They included important damage to the vascular, perivascular and intervascular tissues. There was no clearcut vascular thrombosis. Often the vascular walls were permeated by and their perivascular spaces distended with fibrin. In the nervous tissue surrounding venules and precapillaries the lesions were either of partial demyelination with some outfall of axis cylinders or of changes leading up to necrosis. The association of the former with obviously less severely affected vessels situated at a distance from the most damaged areas suggest different degrees of injury by a single noxious agent. A few foci of partial demyelination apparently occurred independently of a vessel. The intense polymorphonuclear infiltration in the perivascular spaces and in the nervous tissues bore witness to the acuteness and severity of the condition. The changes suggest an acute demyelinating disease such as postvaccinal encephalitis rather than a virus malady characterized by a polioclastic type of lesion. The brains were received fixed in formaldehyde-saline solution. No organisms were seen in stained sections. The author compares the lesions in his 2 cases with those encountered in brain purpura and in Baker's hemorrhagic encephalitis. He suggests that acute hemorrhagic leukoencephalitis may represent a link between demyelinating diseases and some forms of "hemorrhagic encephalitis."

Monatsschrift für Geburtshülfe und Gynäkologie, Basel

111:1-120 (Aug.) 1940

*Hypoprothrombinemia and Hemorrhagic Diathesis of the Newborn and Its Relations to Vitamin K. N. Fiechter.—p. 1.
Investigations on Body Temperature of Women in Correlation to Phases of Genital Cycle. Ursula Vollmann.—p. 41.
4.4 Dioxy-Alpha-Beta Diethylstilbene (Stilbestrol), a Synthetic Compound with Action Resembling Estrogenic Hormone. C. A. Joël.—p. 63.

Hypoprothrombinemia in the Newborn and Vitamin K.—Fiechter states that with the aid of a new micromethod based on the principle of Quick's method, but requiring only 0.13 cc. of capillary blood, it is possible to demonstrate a physiologic retardation of the clotting time due to a prothrombin deficiency during the first week of life. This transient disturbance in the clotting time exists at birth in a slight degree and reaches its maximum between the third and fifth days of life. This retardation of the clotting time of the newborn can be prevented either by giving vitamin K to the pregnant woman or by administering it to the newborn. In hemorrhagic diathesis of the newborn, which coincides with the physiologic hypoprothrombinemia, the clotting time is likewise prolonged. It can be influenced by vitamin K, which arrests a manifest hemorrhage. In cases of melena neonatorum observed by the author, vitamin K replaced blood transfusion. The delay in clotting time observed in cases of severe jaundice was likewise favorably influenced by vitamin K. In one case subcutaneous bleedings could be arrested. Hypoprothrombinemia of the newborn is probably due to a K hypovitaminosis and to an insufficiently developed function of the hepatic cells.

Schweizerische medizinische Wochenschrift, Basel

71:633-652 (May 17) 1941. **Partial Index**

Present Day Tendencies in Bacteriology. P. Hauduroy.—p. 633.
*Stenosis of Aortic Isthmus as Pathologic-Physiologic Problem. W. Löffler and W. R. Hess.—p. 636.
Anomaly in Location of Aorta: On the Right Side and Behind the Esophagus. R. Humbert.—p. 640.
*Prophylaxis of Diphtheria. E. Traub.—p. 641.

Stenosis of Aortic Isthmus.—Löffler and Hess report the case of a man in whom a cardiac defect was discovered at the age of 13. Examination at the age of 25 disclosed a stenosis of the aortic isthmus. The patient felt well and remained comparatively well for the following ten years. Subsequently he had frequent "colds," which in all probability were manifestations of pulmonary stasis, the first sign of circulatory insufficiency. The patient died at the age of 43, eighteen years after the stenosis had been recognized. Stenosis at the isthmus leads, as a rule, to complete obliteration of the aorta beyond the branching off of the large vessels for the upper part of the body. By this obliteration at the transition of the arch into the descending aorta the body is virtually divided into two peripheral circulatory regions with entirely different blood perfusion. The upper half of the body inclusive of the coronary system maintains its normal relation to the heart, whereas the lower half has been deprived of its main source of perfusion, the aorta, and requires a number of compensatory mechanisms to insure adequate blood supply. This case, as well as others reported in the literature, indicates that a person with stenosis of the aortic isthmus can live for years with a compensated circulation. In the case described cardiac function had already become adjusted to the demands of the periphery when the man first came under the authors' observation. There was cardiac hypertrophy, hypertension in the proximal portion of the arterial system, adequate pressure in the distal portion and collateral circulation. Such instances demonstrate an astounding capacity of the cardiac muscle for compensation. The authors warn, however, against excessive optimism in the prognosis of such cases.

Prophylaxis of Diphtheria.—Traub compared the clinical course of diphtheria in immunized and nonimmunized children. His observations were made on 2,775 occupants of the children's hospital in Brünn from November 1934 to July 1938. He found that the course of diphtheria was considerably milder in the immunized children. The mortality was only one-third that of the nonimmunized, and the incidence of the malignant type

of diphtheria was less than one-half that in the nonimmunized. Mortality in the severe type was likewise much less in the immunized than in the nonimmunized. The author defends and urges the practice of prophylactic immunization against diphtheria.

Note e Riviste di Psichiatria, Pesaro

70:1-120 (Jan.-March) 1941. **Partial Index**

*Blood in Dementia Paralytica After Malaria Therapy. I. Passanisi.—p. 37.

Blood in Dementia Paralytica.—Passanisi observed the behavior of blood in eight patients with dementia paralytica of from two to eight months' duration, before and after malarial therapy. He found that paralytic anemia, and especially hypoglobulia, is aggravated by malarial therapy and that postmalarial hypoglobulia can be controlled by daily administration of liver extract for twenty consecutive days.

Policlinico, Rome

47:1739-1786 (Oct. 21) 1940. Prac. Sec. **Partial Index**

*Estrogen in Therapy of Hemorrhages. F. Patrignani.—p. 1739.
*Therapy of Open Fractures. E. Agostinelli.—p. 1742.

Estrogen for Hemorrhages.—Patrignani obtained good results from injections of estrogen in 13 cases of tuberculous and nontuberculous hemoptysis. Best results were obtained from highly concentrated estrogen (estradiol benzoate). The control of hemorrhage was rapid and permanent.

Therapy of Compound Fractures.—Agostinelli advises against primary suture of the wound in compound fractures, especially in war. He reports good results from primary treatment of the wound followed by reduction and immobilization. The wound is cleansed, and carefully disinfected, and the marginal tissues are cut away. The fracture is reduced, and a cast with a window and continuous traction by means of weights are applied. Gauze compresses soaked in cod liver oil are applied every other day to the wound. A preparation of ascorbic acid and calcium is administered in the course of the treatment. Early active mobilization is applied to the joint of the fractured limb. The author believes that this treatment prevents infection and stimulates rapid healing of the wound.

Prensa Médica Argentina, Buenos Aires

28:1247-1298 (June 11) 1941. **Partial Index**

*Pellagra and Its Therapy. C. Pinedo.—p. 1281.

Pellagra.—According to Pinedo, pellagra is rare in Argentina. Lesions involve the mucous membranes of the digestive tract from mouth to anus, the skin, the brain, the spinal cord and the nerves. Mental disorders and blood dyscrasias are present. Neurologic symptoms vary with the localization of degenerative processes in the nervous system. The disease is mainly due to hypovitaminosis B. It is curable except in advanced stages. Hygiene is of importance. The treatment consists of a diet of plenty of milk, 3 spoons of yeast in milk daily, eggs, meat, fresh vegetables and fruit. If glossitis makes eating difficult, abundant milk, yeast and fruit juices are given for about one week, after which the full diet is resumed. In moderately grave cases the treatment is complemented by daily administration of fractional doses of 30 or 50 mg. of nicotinic acid up to a daily dose of 300 or 500 mg. of nicotinic acid and of large doses of vitamin B. Both may be administered orally or parenterally. Liver and iron are indicated in pellagra with either hypochromic or macrocytic anemia. Residual paralysis and mental impairment are preventable if the treatment is administered early in the course of the disease when nervous lesions are still reversible.

Revista de Cirugía de Buenos Aires

20:143-192 (April) 1941. **Partial Index**

*Treatment of Chronic Osteomyelitis. A. Gutiérrez.—p. 143.

Treatment of Chronic Osteomyelitis.—Gutierrez's treatment consists of filling the medullary canal of the involved bone with a muscular flap. Trauma of muscles and nerves is avoided as much as possible. The medullary canal is opened by trephining, is carefully cleansed and is filled with the flap, which is left in position by means of three or four catgut sutures and covered with adjacent muscle and skin. The deltoid muscle is used to fill the medullary cavity of the upper part of the humerus, and the anterior brachial to fill that of the lower half of the bone. Both muscles are used for the upper and lower halves of the humerus in diffuse, bipolar humeral osteomyelitis. The crural muscle covered by the vastus externus muscle is utilized in osteomyelitis of the femur, and the anterior tibial in osteomyelitis of the tibia. The blood supply of the flaps is preserved so that the flaps do not undergo necrosis. The author believes the method to be of great value.

Archiv für klinische Chirurgie, Berlin

201:109-338 (April) 1941

*Circulation and Spinal Anesthesia. D. Schneider.—p. 109.
Experimental Investigations on Torsion of Omentum. O. Hatta.—p. 163.
Experimental Investigations on Suppurating Infection of Femur and Tibia in Guinea Pigs. M. Suzuki.—p. 192.
Juvenile Kyphosis of Scheuermann in Light of Formation of Cartilage Callus. S. Nagura.—p. 232.
Investigations on Postoperative Changes of Minute Volume of Heart. S. Harild.—p. 249.
Experiences in Treatment of Appendicitis Perforata. H. Nahrath.—p. 293.
Surgical Results in Malignant Tumors. J. Klemp.—p. 320.
Pathogenesis of Perthes' Disease. S. Nagura.—p. 334.

Circulation and Spinal Anesthesia.—Experiments convinced Schneider that fatalities in spinal anesthesia are frequently the result of circulatory failure. He found that spinal anesthesia leads to a considerable disturbance in the blood distribution, brought about by vascular paralysis in the anesthetized region. The paralysis involves not only the arteries but also the veins. This is the main cause of the fall in blood pressure during spinal anesthesia. The stagnation of large quantities of blood in the periphery, however, does not alone produce circulatory failure. At first there appears a collapse-like condition. Great reduction in pressure and a true collapse develop only when (1) the "autogenous hemorrhage" becomes too great because the vascular paralysis involves large areas, (2) when the organism requires greater circulatory exertion of a regulatory nature or because of a great loss of blood and (3) when because of the failure of normal regulatory processes a compensatory adjustment is no longer possible. The abolishment of certain reflexes originating in the carotid sinus, the failure of the central nervous carbon dioxide regulation and the impairment of the nervous regulation of venous return play important parts, but all are in the last analysis sequels of the chief cause; namely, the vascular paralysis. This is further aggravated by the reduction in the muscle tonus due to paralysis of motor nerves. This factor likewise retards the venous blood return and thus completes the vicious circle. A change in the distribution of blood, the result of paralysis of extensive vascular regions, is the chief cause of the circulatory failure in spinal anesthesia. Studies by the author revealed that the paralysis involves chiefly the vessels of the skin and muscles of the trunk and legs and that the splanchnic region is involved to a much less extent. The author's observations are supported by therapeutic experiments. It was found that because of the stasis in the peripheral circulation the central analeptics and carbon dioxide not only do not help but may actually be harmful. Collapse during spinal anesthesia calls for circulatory stimulants with a peripheral effect. Stimulants which facilitate venous return and emptying of the storage organs are preferable to drugs causing constriction. Transfusions and infusions are valuable as adjuvants during spinal anesthesia.

Chirurg, Berlin

13:225-272 (April 15) 1941. **Partial Index**

Leg Splints. M. Kirschner.—p. 225.
*Question of Frequency of Acute Appendicitis. G. Petrén.—p. 236.
Technic of Plastic Interventions on Renal Pelvis and Ureter in Hydronephrosis. H. Boeminghaus.—p. 244.
Strumectomy Without Drain. M. Saegesser.—p. 261.

Frequency of Acute Appendicitis.—Petrén found that during the last five years the average annual number of cases of acute appendicitis in three cities in southwestern Sweden was between 0.23 and 0.24 per cent of their total population. Appendicitis was somewhat more frequent among men (0.26 per cent)

than among women (0.20 per cent); the age group between 15 and 30 had the highest morbidity (0.39 per cent). Petrén compared the averages of the last five years with those he had obtained in two of the cities thirty years ago. In the city with the largest population the morbidity figures had remained identical, whereas in the smaller city there was an increase. However, the author concludes that in view of possible sources of error it is not justified to conclude that the incidence of appendicitis has really increased. Quensel used the same statistics to determine what percentage of the population of the three cities will have had appendicitis at different age levels and what percentage will contract it throughout life. He ascertained that up to 10 years of age 1.60 per cent of the males and 1.25 per cent of the females will have had appendicitis, up to 20 years 5.20 and 4.50, up to 30 years 8.60 and 7.55, up to 40 years 11.20 and 9.35, up to 50 years 12.90 and 10.20, up to 60 years 14.20 and 11.30, up to 70 years 15.50 and 12.30. Throughout the whole life span 13.8 per cent of the men and 11.1 per cent of the women will have appendicitis, or 12.5 per cent of the total population.

Deutsche medizinische Wochenschrift, Leipzig

67:417-454 (April 18) 1941. **Partial Index**

Defense Against Infection and Sympathetic Nervous System. F. Hoff. —p. 417.
Importance of Vitamins for Natural Defense Powers of Organism. H. Schroeder.—p. 420.
Morphologic Course of Infectious Diseases and Its Relation to Clinical Aspects. S. Gräff.—p. 424.
Parenchymatous Icterus. M. Bürger.—p. 427.
*Spontaneous Hypoglycemia and Hypophysis. F. Meythaler.—p. 433.
Hypoglycemia as Symptom of Hypophysial Diseases. J. Brinck.—p. 437.
Prognosis of Nephrotic Disturbances of Kidney. S. Litzner.—p. 440.

Spontaneous Hypoglycemia and Hypophysis.—Meythaler believes that the function of the liver in the intermediary carbohydrate metabolism with its dependence on the neurohormonal regulation by the diencephalohypophysial system and the incretory glands is responsible for the disturbances in the regulation and equilibrium which lead to spontaneous hypoglycemia. He presents the history of a woman aged 46 who for six years had been subject to attacks characterized by a feeling of weakness, loss of memory, fainting and somnolence. The attacks occurred as a rule before the noon meal. A severe hypoglycemia was discovered to be the cause of these attacks. The author attempts to prove that the severe spontaneous hypoglycemia in this case was due to a relative hyperinsulinism, which in turn developed because of a hormonal correlation disturbance between the diencephalohypophysial system and the other secretory glands. The eliciting factor of the hypoglycemia was the hypofunctioning of the anterior lobe of the hypophysis, which in turn was the sequel of many years of excessive demands on this organ following early total extirpation of the uterus and its adnexa (age of 23). By the time the woman reached the period of the physiologic climacteric, the anterior hypophysis was so exhausted that the pancreas became dominating.

Fortschritte a. d. Gebiete der Röntgenstrahlen, Leipzig

63:247-310 (May) 1941

*Perthes' Disease as Manifestation of Wear and Tear Reaction of Skeleton and Its Differentiation from Various Epiphysial Disturbances. W. Müller.—p. 247.
Technic of Bronchography and Diagnosis of Bronchial Carcinoma. K.-H. Krohn and W. Baer.—p. 267.
Study of Cardiac Shadow in Roentgen Screen Photography. M. Dimitrow.—p. 285.
Vertebral Changes in Tumors of Spinal Cord. E. G. Mayer.—p. 293.
Roentgenologically Diagnosed Diverticulum of the Vermiform Appendix. G. Somogyi.—p. 299.
Ball Shaped Pad Effect at Duodenal Bulb as Symptom of Carcinoma of Head of Pancreas. J. Bücker.—p. 303.

Perthes' Disease.—Müller states that roentgenologically detected changes in the head of the femur during the period of growth are often grouped together under the term "Perthes' heads." He emphasizes that these changes are not always the result of the same process and that this indiscriminate grouping together of different lesions is one of the reasons why the nature of Perthes' disease is still obscure. He was able to observe the appearance and course of Perthes' disease in a case of manifest skeletal inferiority with zones of transformation and wear reactions on the tibias but with initially normal hip joints. This disease is apparently a manifestation of a general inadequacy of the osseous parts of the hip joint. The changes in the epiphysis are neither the only nor the primary defect but are rather a partial manifestation of a deep seated transformation observable chiefly in the neck of the femur in the form of structural changes broadening by periosteal addition and of pictures resembling those of Schmorl's cartilaginous nodules of the vertebral column. These transformations in the neck of the femur lead to changes in the epiphysis. The flattening of the acetabulum is likewise a partial manifestation of the transformation and not a cause or a sequel of the epiphysial changes. In view of the transformations, particularly in the acetabulum and the femoral neck, true Perthes' disease is to be differentiated from the Perthes-like pictures of the hip, particularly from (1) the simple primary destruction of the epiphysis in reduced or unreduced congenital dislocation of the hip and (2) from the congenital inhibitions of the epiphysial ossification, which are hereditary and of which several types have been observed. True Perthes' disease is a partial manifestation of a generalized skeletal inadequacy. It presents in the particularly exposed hip joint the manifestation of the same processes of functional adjustment that are known as processes of transformation of the tubular bones and other severely taxed skeletal parts.

Klinische Wochenschrift, Berlin

20:305-328 (March 29) 1941. **Partial Index**

Question of Development of Substance Stimulating Respiration During Muscular Exertion. K. Kramer and O. Gauer.—p. 309.
Active Substances in Mistletoe: Their Pharmacologic and Clinical Significance. A. Enders, O. Feuchtinger and S. Janssen.—p. 311.
Investigations on Occurrence of Plasma Cells in Experimental Hyperglobulinemia in Rabbits. M. Bjørneboe and H. Gormsen.—p. 314.
*Aspects of Carcinoids of Appendix. H. C. à Wengen.—p. 316.
*Differential Diagnostic Value of Aspects of Cerebrospinal Fluid in Sciatica. L. Pribék.—p. 320.

Carcinoid of the Appendix.—According to à Wengen, carcinoids of the appendix are known under such terms as tumors of the appendix, basal cell cancers, basalomas, carcinoid tumors, pseudocarcinomas, mucosal nevi, pancreatic tumors and endocrine tumors. The term carcinoid is used widely. He reviews 18 cases of carcinoid of the appendix observed at the surgical clinic in Basel from 1934 to 1940. Carcinoids are yellowish white dense formations which vary in size from a millet seed to a cherry, although in one of his cases the carcinoid was twice the size of a fist. They originate in the wall of the appendix and may infiltrate inward or outward. The majority of the carcinoids are diagnosed by microscopic examination. As a rule they escape clinical diagnosis and are discovered in the course of an operation or at necropsy. Carcinoids are epithelial neoplasms. The fact that they produce no metastases, as a rule, proves their relatively benign character, but they may manifest signs of a malignant condition. Metastases may be observed in the proximal lymph nodes, the mesenteriolum, the mesentery and peritoneum and even in the more distant organs such as the liver and ovaries. Metastasization is the only macroscopic sign by which malignant carcinoids can be differentiated from the benign. The author observed metastases among his own cases. Carcinoids are often regarded as hamartoma-like tumors and as originating from an anlage of accessory pancreatic tissue. Other etiologic theories stress the chromaffinity and argentaffinity of the carcinoid cells and suggest a relationship to the adrenals or to the endocrine organs in general. Appendectomy is an adequate treatment, but in the presence of metastases the operation must be as radical as possible. Postoperative roentgen therapy is unnecessary in the benign, and influences only isolated metastases in the malignant, carcinoids.

Cerebrospinal Fluid in Sciatica.—Pribék points out that it is often difficult to differentiate sciatica from lumbago or muscular rheumatism. Differentiation of sciatica demands careful physical examination, roentgenoscopy of the vertebral

column in different exposures, myelography observation on the cutaneous temperature, and examination of the cerebrospinal fluid. Thermo electrical determination of the cutaneous temperature in various regions of the course of the sciatic nerve permits differentiation between lumbago and sciatica, because in sciatica the temperature of the diseased side is from 0.3 to 0.5 degree C. (0.54 to 0.9 degree F.) lower than that of the healthy side, while in lumbago the temperature is the same on the two sides. The author performed spinal puncture and examination of the fluid in 20 cases. The pressure of the fluid varied in different disorders. In muscular rheumatism it was between 12 and 15 cm. of water; in lumbago it averaged 15 cm. and in sciatica 21 cm. The number of cells was increased in sciatica, even if the fluid was clear. The total protein and the sugar content were usually increased in sciatica. The cerebrospinal fluid of patients with lumbago or muscular rheumatism was usually normal.

Medizinische Klinik, Berlin

37:397-428 (April 18) 1941. **Partial Index**

Diagnosis and Treatment of Catarrhal Icterus. R. Schoen.—p. 397.
Acute Impairment of Hepatic Parenchyma and Industrial Poisons. N. von Jagić and H. Seyfried.—p. 400.
Symptomatology of Echinococcus Alveolaris of Liver. H. Wendt and F. Oehr.—p. 401.
*Present Status in Therapy of Acute Pancreatic Necrosis. R. Demel.—p. 404.
Significance of Adjustment of Ferments for Course of Infection and Defense Against It. E. Abder.—p. 408.
Constitution and Heredity in Endocrinopathia. H. Curschmann.—p. 409.
Question of Early Diagnosis and Treatment of Gastric Cancer. H. Prinz.—p. 412.

Treatment of Acute Pancreatic Necrosis.—According to Demel, diagnosis of acute pancreatic necrosis was formerly regarded as an indication for immediate operation. Evaluation of the results of early operation disclosed a mortality of from 52 to 78 per cent, and necropsies revealed that the necrotic process is not arrested by the operation. These observations induced many surgeons to adopt a conservative attitude. The tendency now, in the presence of acute pancreatic necrosis, is to put the digestive tract at rest. This effects a cure in the majority of the cases. Even in the grave cases the operation is postponed until the dangerous acute symptoms have subsided. Immediate laparotomy is done only if the diagnosis is not entirely clear and perforation of a gastric or duodenal ulcer or of the gallbladder or an ileus seem possible. If the laparotomy discloses an acute pancreatic necrosis the abdominal cavity is closed without further intervention. Surgical treatment becomes necessary when a pancreatic abscess develops at a later stage. Operation in the interval is likewise indicated if biliary symptoms have not entirely disappeared and if the history suggests disease of the biliary tract. Surgical treatment of biliary tract disease mitigates the danger of relapse of acute pancreatic necrosis. Medical and dietetic treatment are important during the early stage. Shock is treated by drip infusion of dextrose and insulin and by circulatory stimulants. Atropine may be helpful because it decreases pancreatic secretion and counteracts irritation of the vagus and vascular spasms.

Folia Pharmacologica Japonica, Kyoto

32:1-102 (May) 1941. **Partial Index**

*Influence of Opium Alkaloids on the Acid-Base Balance and the Gaseous Exchange in the Blood of Rabbits. F. Ra.—p. 76.

Opiates and Blood Chemistry.—Ra investigated the changes, particularly the acid-base equilibrium and gaseous exchange, which opium alkaloids produce in the blood of both normal and sympathicotomized rabbits. Of the several varieties of opium alkaloids studied, namely morphine, heroin, codeine, apomorphine, papaverin and pantopon, the effect of morphine typifies the reactions induced by all the other opiates as well. When morphine hydrochloride was injected in doses varying from 20 to 100 mg. per kilogram of body weight, significant biphasic changes in the blood p_H occurred. Being a respiratory depressant, morphine induces oligoxemia, which in turn leads to the accumulation of organic acids due to the incomplete oxidation of carbohydrates and proteins. The compensatory hyperbicarbonatemia accompanying such conditions was more than neutralized by a decided increase of free carbonic acid (hypercapnia), causing a pronounced gaseous acidosis in the first stage of morphine narcosis. On the other hand, as the toxic effect of morphine wears off, the resulting polyoxemia accelerates the elimination of carbon dioxide and the slight excess in the alkali reserve causes a nongaseous type of alkalosis. Changes similar, though to a far less extent, are noted in animals with bilateral vagotomy, but in animals with bilateral section of the cervical sympathetic and splanchnic nerves the injection of morphine hydrochloride produced a nongaseous alkalosis without the preceding acidosis, owing to a pronounced hyperbicarbonatemia associated with only a slight hypercapnia. The author concludes that the autonomic nervous system plays an important role in the regulation of the acid-alkali balance of the body, since morphine acidosis was related to the sympathetic nerves and alkalosis to the parasympathetics. As judged from the biphasic reactions occurring in morphine narcosis, the tone tension of the autonomic system is the controlling factor in that the pronounced sympathicotony explains the hyperglycemia and lactic acid acidosis as well as increase in blood epinephrine, while the moderate vagotony accounts for a decrease in pulse and respiratory rates as symptoms of alkalosis.

Gann, Tokyo

35:65-132 (April) 1941. **Partial Index**

*Inhibition of the Experimental Production of Liver Cancer by Millet Feeding. S. Morigami and N. Kasiwabara.—p. 65.
*Effect of Animal Tissue Feeding on Experimental Production of Liver Cancer, Especially the Inhibitory Effect of Kidney Tissue. K. Mori.—p. 104.
*The Sperm of Sea Urchin as a Biologic Test Object in Roentgen Dosimetry. M. Miwa, H. Yamashita and K. Mori.—p. 127.

Millet Feeding and Experimental Liver Cancer.—Morigami and Kasiwabara used 100 albino rats, 50 of which were fed millet and the remaining number polished rice as staple food, all receiving butter yellow over a period of one hundred and sixty-five days. Ten animals in the millet group survived the experimental period and in 5 of these the liver was found to be entirely normal, in 4 there was a mild proliferation of connective tissue and in 1 there was one nodular hepatoma, unaccompanied by the proliferation of either connective tissue or bile ducts. In all of the 5 animals of the polished rice group which survived the experimental period, typical hepatoma of varying degrees was observed. These results point to the presence in millet of a potent principle which has an inhibitory effect on the development of experimental butter yellow hepatoma.

Cystine and Experimental Butter Yellow Cancer.—Mori selected l-cystine as an example of the SH group of substances having close bearing on tissue growth, as advocated by Abderhalden and Wertheimer. The substance was incorporated into an olive oil solution of butter yellow in such a proportion that the animal consumed 1 Gm. of l-cystine for each kilogram of polished rice. After a one hundred and fifty day experimental period, involving two groups of 40 albino rats, one of which was used as a control, it was found that the feeding of sulfhydryl compounds (l-cystine) had no effect on the experimental production of liver cancer by administration of dimethylaminoazobenzene (butter yellow).

Sea Urchin Sperm in Roentgen Dosimetry.—Miwa, Yamashita and Mori had previously shown that the time of the first cleavage of sea urchin eggs is delayed with increasing doses of radiation administered either to the eggs or to the sperm prior to insemination. In this study Miwa and his associates have determined the radiation quantity in the depth of a water phantom biologically and compared it with the results obtained by the ionic method. The principle utilized in this study is the fact that at room temperature the first cleavage of the eggs occurs within two hours after insemination and that at a given temperature the time of the first cleavage is determined only by the radiation quantity administered, depending neither on the duration of such irradiation nor on the time between irradiation and insemination. The sperm of sea urchin is reasonably radiosensitive, 2,000 roentgens being sufficient to produce a delay in cleavage by approximately twenty minutes, the normal time at room temperature being about eighty minutes. The spawning season of each species of sea urchin differs from that of all the

others, so that the germ cells are available in almost any season. Based on experimental observations of two species of sea urchin, Pseudocentrotus depressus and Strongylocentrotus pulcherrimus, the authors conclude that the sperm of these species is entirely satisfactory as a test object in the determination of the roentgen ray dosage at constant distance and temperature.

Taiwan Igakkai Zassi, Taihoku, Formosa

40:647-856 (April) 1941. **Partial Index**

Wuchereria Bancrofti Infestation Among Inhabitants of Yaeyama Islands. T. Yosino and T. Nakasato.—p. 749.
*Anaphylactic Reactions with Fungi. K. Nakagawa.—p. 831.

Anaphylactic Reactions with Fungi.—Nakagawa examined allergic reactions with molds in guinea pigs, employing Mucor cunninghamelloides Pispek and Aspergillus oryzae Cohn. The antigens were prepared both in the form of their saline extracts and in alcoholic precipitates of aqueous extracts of these fungi, and the results were judged by the degree of anaphylactic shock and by the nature of intestinal contractions. The preliminary sensitization procedure consisted of repeated intraperitoneal injections of diluted antigens; the anaphylactic phenomenon was observed after a lapse of two weeks following these injections, when the animals were given one intravenous injection of the same antigens. The shock phenomenon was recorded in terms of changes in body temperature as well as by observations of the clinical manifestations. The contractions of the excised intestine suspended in Tyrode solution were recorded by means of a kymograph. While the simple extracts of these molds gave rise to anaphylactic reactions in but a small number of animals, the alcoholic extracts were found to be effective in producing well defined reactions in nearly all animals. The two varieties of fungi investigated could not be differentiated by cross tests. From these observations the author concludes that it is experimentally possible to induce allergic reactions with Mucor cunninghamelloides Pispek and Aspergillus oryzae Cohn in guinea pigs.

Vestnik Khirurgii, Leningrad

60:451-648 (Dec.) 1940. **Partial Index**

Nikolai Ivanovich Pirogov.—p. 451.
*Residual Blood Nitrogen in Appendicitis and in Adnexitis. L. K. Foy.—p. 455.
Functional Anatomy of the Lymphatic System. D. A. Zhdanov.—p. 459.
Peritonsillar Infection in a Surgical Clinic. Y. A. Elkin.—p. 468.
Peripheral and Visceral Neurinomas. M. M. Bass.—p. 476.
Statistics on Results of Surgical and Combined Treatment of Malignant Growths. A. Z. Kozdoba and E. Y. Shwarts.—p. 485.
*Pulmonary Suppuration. N. A. Vashchinskyy.—p. 499.

Residual Blood Nitrogen in Acute Appendicitis and in Acute Adnexitis.—Foy studied the residual blood nitrogen in 75 cases of acute appendicitis. In acute and subacute catarrhal appendicitis the residual nitrogen rose to 42 to 75 mg. per hundred cubic centimeters of blood, in suppurative appendicitis to 54 to 80 mg., in gangrenous forms to 50 to 85 mg. and in appendicular tumefaction or encapsulated abscess to 40 to 56 mg. This biochemical reaction manifested itself sooner than the leukocyte response. A study of 50 patients with acute and chronic inflammatory disease of the uterus, the adnexa and the parametrium showed that the residual blood nitrogen varied between 24 and 48 mg. per hundred cubic centimeters; that is, within normal limits. Determination of the residual blood nitrogen gives an earlier estimation of the course and gravity of the inflammatory process than the leukocyte count and may be utilized as a differential diagnostic sign between acute appendicitis and acute adnexitis.

Pulmonary Suppuration.—Of the 125 patients with pulmonary suppuration who were the subject of the report by Vashchinskyy, 86 per cent were males and 81 per cent had a past history of pneumonia, pleuritis, grip or bronchitis. There were twice as many heavy smokers as nonsmokers. No definite etiologic role could be assigned to any factor. Dry diet regimen, postural drainage, neoarsphenamine and emetine proved ineffective. Best results were accomplished with roentgen irradiation. Of 80 patients treated with roentgen radiation a cure was obtained in 68 per cent. Irradiation combined with conservative operative interventions of the collapsing type had a mortality of 9 per cent as compared with 30 to 40 per cent obtained with the operation of pneumotomy at the hands of master thoracic surgeons. The author therefore feels that indications for pneumotomy should be further delimited.

Maandschrift voor Kindergeneeskunde, Leyden

9:427-460 (Aug.) 1940

Myositis Ossificans Progressiva. S. van Creveld and J. M. Soeters.—p. 427.
*Abdominal Tuberculosis in Children. R. J. Harrenstein.—p. 442.
Congelation Presenting Appearance of Spina Ventosa. N. I. Heybroek.—p. 453.
Recognition of Intestinal Invagination. A. G. Schoo.—p. 457.

Abdominal Tuberculosis in Children.—Harrenstein includes under the term abdominal tuberculosis peritoneal involvement, tuberculosis of the mesenteric lymph nodes and of the abdominal organs, particularly the intestine. The slight cutaneous sensitivity of these patients to tuberculin increases the diagnostic difficulties. In 47 the diagnosis was established by operation. The first diagnosis in the majority of the 48 children had been erroneous, the tuberculous process being frequently mistaken for appendicitis. Tuberculosis of the mesenteric lymph nodes was established in 20 of the 48 and tuberculous peritonitis in 23; in 5 intestinal tuberculosis was suspected. Six patients died, while 42 were discharged as cured and remained in good health.

9:461-500 (Sept.) 1940. **Partial Index**

Melanoblastosis Cutis Linearis. S. Systematisata. W. L. L. Carol and D. J. H. Bour.—p. 461.
*Treatment of Chorea Minor with Intralumbar Injections of Autoserum. H. Broekema.—p. 477.
Umbilical Sepsis. A. van Westrienen.—p. 492.

Intraspinal Autoserum in Chorea Minor.—Broekema resorted to intraspinal injection of autoserum in the treatment of chorea minor in 13 children. Injection of 10 cc. of the patient's own serum is frequently followed by headache, fever and vomiting. In some patients one injection effects a cure, but in most cases from two to four injections were necessary. The results were as favorable as those obtained with other treatments, but, unlike other measures, autoserotherapy is without danger and may be successful when other methods have failed.

Nordisk Medicin, Stockholm

10:1431-1510 (May 10) 1941. **Partial Index**

Hygiea

Regeneration of Skin Epithelium. G. Levander.—p. 1489.
Endometriosis as Cause of Ileus. O. Hultén.—p. 1492.
*Cholesteatoma in Ear. M. Uddströmer.—p. 1496.
Frequency of Hypertonia in Diabetes Mellitus Treated with Diabetes Diet and with Normal Diet. S. Törnell.—p. 1501.

Cholesteatoma in Ear.—Uddströmer asserts that cholesteatoma occurs in about one third of all chronic inflammations of the ear, is more often in men and is present in most epitympanic cases. It varies from the size of a hemp seed to that of a hazel nut, but giant cholesteatomas and microcholesteatomas have been described. A characteristic of the cholesteatoma is putrid degeneration in its interior, giving rise to a thick, purulent, fetid discharge of a dirty gray color. Spontaneous healing is rare. In about two thirds of the cases conservative treatment gives good results. The importance of lavage with fluids nearly or wholly free from water (as alcohol, carbon tetrachloride) is stressed. Surgical treatment is indicated in threatened or developed intracranial complications, in paralysis of the facialis, subperiosteal breaking through to the mastoid process, in cases in which from four to six weeks' conservative treatment has proved ineffective, in cases of troublesome recurrence between periods of successful conservative treatment, and in cases in which the conditions for conservative treatment are unfavorable. With proper treatment before the onset of complications the prognosis as to life is favorable. In untreated or improperly treated cases there is danger of complications, mainly intracranial, threatening life.

Book Notices

Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1940 with the Comments That Have Appeared in The Journal. Cloth. Price, $1. Pp. 181. Chicago, 1941.

The thirty-nine reports contained in this volume range in subject from records of drugs cast on the therapeutic scrap heap to statements on the names and uses of latest additions to the physician's armamentarium. Among the discontinued are two proprietary drugs, Isacen and Melubrin: Isacen was accepted in 1926 as a nontoxic laxative or purgative; Melubrin is an antipyretic which seemed to have promise when it was accepted in 1913 but which the manufacturer has now ceased marketing. At the time these preparations were accepted the Council expressed some misgivings which later proved justified.

Among the reports on nomenclature are those designating "pyridoxine" and "pyridoxine hydrochloride" for vitamin B_6 and vitamin B_6 hydrochloride, "sulfathiazole" for 2-sulfanilamidothiazole and "sulfamethylthiazole" for 2-sulfanilamido-4-methylthiazole. Preliminary reports on these drugs as well as on phenothiazine and histaminase are included.

Other noteworthy preliminary reports are on guanidine hydrochloride-Calco, which has been proposed for use in the treatment of myasthenia gravis, and acetylglycarsenobenzene, a new antisyphilitic for intramuscular use, which the Council feels should be further perfected. In its report the Council comments with approval on the manner in which the Winthrop Chemical Company has developed the latter and studied it before even considering its commercial production.

All the so-called reports of status are noteworthy. The report on the present status of the injection treatment of hernia is a continuation of the Council's consideration of this question; it condemns the exploitation of the injection treatment of hernia by manufacturers of solutions. Another report concerns lipocaic, a new pancreatic hormone concerned with the normal transport and utilization of fat. The Council awaits development of further clinical evidence for lipocaic and expresses the opinion that the method should not be recognized for routine practice.

There are a number of interesting reports in the "nonacceptable" category; the one on the widely exploited neurosine of the Dios Company sounds a timely warning on the hazards of bromidism and uncontrolled hypnotic medication. The report rejecting a number of preparations of gonadotropic hormone from the serum of pregnant mares, together with the report rejecting certain ovarian and ovarian anterior pituitary preparations, attests the Council's continued critical interest in the field of endocrinology. This is also indicated in the report on desoxycorticosterone written by Dr. Edgar S. Gordon and adopted by the Council for publication with a statement of the Council's attitude on the present status of adrenal cortex. The Council finds adrenal cortex therapy now in an unsatisfactory and unsettled state.

Mention must be made of the excellent report on organic mercurial compounds as bactericidal agents, which states the Council's conclusion that none of the organic mercurial compounds offered will guarantee the destruction of spores under all conditions.

Another valuable report is that on the promiscuous use of the barbiturates. This is a continuation of a previous study of the use of barbiturates in suicide. The present study is an analysis of hospital data.

Your Teeth: Their Past, Present, and Probable Future. By Peter J. Brekhus, B.A., D.D.S., Professor of Oral Diagnosis, School of Dentistry, University of Minnesota, Minneapolis. With a foreword by Irvine McQuarrie, Ph.D., M.D., Professor and Head of the Department of Pediatrics, University of Minnesota. Cloth. Price, $2.50. Pp. 255, with 20 illustrations. Minneapolis: University of Minnesota Press, 1941.

This book is a scholarly and important contribution to health literature for intelligent lay readers. It is also a valuable and readable review for general practitioners of medicine and for dentists. The bibliographies alone constitute a veritable "Who's Who" in modern dental research. The book is beautifully printed and illustrated with many plates and diagrams. It is well indexed.

The book is a severe indictment of civilization, at least as far as the teeth are concerned. Whatever the specific causative factor may be, civilization is ruinous to the teeth. Primitive man wore his teeth to stumps and suffered from abscesses and pyorrhea but did not know dental caries as we know it. Modern savages appear to suffer caries in direct proportion as they come in contact with civilization. The Eskimo, the Maori, the Bantu, the Zulu, the Bedouin, the Igorot, the Samoan, the Thibetan or the Chinese each has better teeth than the American or European. In China it has even been shown that the teeth improve among the natives as one departs farther from the vicinity of the foreign commerce ports.

The author discusses extensively the theories as to why dental caries is increasingly prevalent in generation after generation of civilized persons, to the extent that each generation has, as a whole, poorer teeth than the preceding. The three theories which have been suggested most seriously to explain dental caries are the infection theory, the nutrition theory and the functional theory. Each has evidence in its support and numerous protagonists, but none explain all the facts. The author seems to lean more to the functional theory, though he is cautious about endorsing any without reservation. He points out, however, that the progressive diminution in the size of the jawbone, even in a few recent generations, indicates strongly that the use of the teeth is more important than either nutrition or infection or, for that matter, heredity, to which he appears to give little weight. He does not regard gum chewing as use of the teeth.

Aside from the large amount of space devoted to the problem of caries there are excellent discussions of the relation of dental health to general health, pyorrhea, malocclusion, why we lose our teeth, progress from witch doctor to modern dentist, the teeth of other races, dental disease and dental adaptation among animals, the development of human teeth, biologic factors in the loss of teeth, and how we can save our teeth.

The book is scientific in approach, cautious in evaluation and conservative in opinion. It offers a well balanced discussion, with admittedly a pessimistic conclusion as to the likelihood of saving our teeth. Medical readers will probably object to the author's recommendation that, in effect, the government ought to embark on a huge dental care program for all the people, without, however, interfering with private dentistry for those who can pay for it! This excursion into the economic field is the only feature of the book which suggests adverse criticism.

Brucellosis (Undulant Fever): Clinical and Subclinical. By Harold J. Harris, M.D., Health Officer, Westport, N. Y. Foreword by Walter M. Simpson, M.D., F.A.C.P., Director, Kettering Institute for Medical Research, Miami Valley Hospital, Dayton, O. Cloth. Price, $5.50 Pp. 286, with 56 illustrations. New York & London: Paul B. Hoeber, Inc., 1941.

Despite the rapid succession of reports, particularly during the past decade, of the widespread incidence of brucellosis in this country as well as in most other parts of the world, a feeling of skepticism apparently still exists in the minds of many physicians regarding any wide prevalence of the disease. The contributions of many reliable American investigators in the fields of medical and veterinary science have done much to dissipate this aura of doubt. The monograph by Harris is particularly timely, since it provides undeniable evidence that brucellosis is a much more important public health problem than the official records of state health departments would indicate.

While Harris has devoted a considerable portion of his book to a recitation of his personal experiences with some 250 patients, it contains also a liberal and well balanced consideration of the world literature bearing on this subject. The material in the book is well organized and has a facile style which makes for early reading. The author marshals strong evidence to dispose of the persistent fallacies that the disease is uncommon, that it is self limited, that it is easily recognized through the finding of a high serum agglutination titer in a patient acutely ill, that a negative agglutination test rules out brucellosis, that a positive cutaneous test alone establishes the diagnosis and that brucellosis is easily cured by a variety of therapeutic agents or by time alone.

Ordinarily such a monograph represents the results of studies made in the favorable environment of a university or in a large

research institution. Harris, on the contrary, faced and overcame obstacles which would ordinarily be regarded as insurmountable. A part time health officer and an active practitioner in a rural area, he was faced with the necessity of dispatching specimens of blood, urine, exudates and tissues to the nearest properly equipped laboratory, 135 miles away, for confirmation of his own clinical and laboratory observations. The necessary literary research was done without immediate access to a suitable medical library. The book has the refreshing approach of one who, as the result of day by day general practice, had borne in on him gradually the realization that he was surrounded by a common disease which he had overlooked for over a decade. The advantages of close and long continued personal contact with loyal patients in a rural area played an important role in the evaluation of diagnostic and therapeutic measures. Harris's successful pursuit of his subject provides another example of the fact that many important contributions to medical literature have come from the pens and the minds of physicians who labored in obscure places without the advantages that are too often regarded as indispensable.

Some students of brucellosis will disagree with Harris in the emphasis he places on the opsonocytophagic test as a diagnostic procedure and as a guide to therapeutic response. There is a growing belief that this test possesses little merit and that it often leads to confusion. It should be recognized, however, that the value of the diagnostic tests (agglutination test, intradermal test and opsonocytophagic test), in the absence of cultivation and identification of the organism, is a subject for lively disagreement among investigators, particularly in the diagnosis of the widespread chronic ambulatory form of brucellosis.

This monograph is addressed chiefly to the general practitioner, to whom the opportunity is usually first presented for the recognition of the disease. The internist, the neurologist, the ophthalmologist, the dermatologist, the orthopedist, the radiologist and the clinical pathologist will likewise profit from a perusal of this clear, concise and authoritative monograph. The publishers are also to be felicitated for the artistic format and for the faithful reproduction of the many illustrations, including several kodachrome pictures of the cutaneous lesions.

Malignant Disease and Its Treatment by Radium. By Stanford Cade, F.R.C.S., Surgeon, Westminster Hospital, Mount Vernon Hospital, and The Radium Institute, London. Fabrikold. Price, $18. Pp. 1,280, with 623 illustrations. Baltimore: William Wood & Company, 1940.

This large volume represents the personal experience and point of view of the author, long an English leader in radium therapy. The technic and end results are based on an experience in the radiation treatment of more than three thousand cancers during the period of 1924 to 1939.

There are three major subdivisions of the book. The first section, dealing with the physics of radiation, includes chapters on radioactivity, radium dosimetry, general principles of technic in radium therapy and teleradium treatment. The second section is devoted to the biologic effects of radiation, such as radiosensitivity, the mode of action of radiation, the effects of radium on normal tissues, the effects of radium on malignant tumors and radium dangers and protection. The final section surveys the natural history and treatment of malignant tumors, with the chapters divided according to the region or tissues involved, such as the lip, tongue or breast. After a preliminary and well summarized review of the incidence, etiology, pathology and symptomatology of the regional tumor under consideration, the surgical indications and limitations are carefully stated. The remainder and major portion of each chapter is then concerned with the details of radium therapy and the end results of this treatment. In this respect the book is a welcome variation from many previously published textbooks on radiation therapy, for the author, a surgeon, has a complete freedom from bias for any particular form of treatment. As he states, "the ideal choice can only be made if all forms of treatment are available and if the choice is independent of any vested interest in an x-ray machine, a quantity of radium, or the possession of the requisite skill and courage to undertake major surgical operations." Seven of the thirty chapters have been written by colleagues of Mr. Cade, and they have been well selected as authorities in their respective fields.

In summary the book is an up to date, thorough treatise on radium therapy. In American radiology there have been many substitutions of improved roentgen ray application for some of the radium technics herein described and there are other differences of opinion, e. g. concerning the curability of malignant melanoma by irradiation, although this should not handicap the general usefulness of the book. It is regrettable that the euphemism of "malignant disease" should appear in the title of this book rather than the more specific and entirely adequate term "malignant tumors," which the author really means, in contradistinction to other "malignant" diseases such as bubonic plague, typhus fever and heart disease.

Papers of Wade Hampton Frost, M.D.: A Contribution to Epidemiological Method. Edited by Kenneth F. Maxcy, M.D. Cloth. Price, $3. Pp. 628, with illustrations. New York: Commonwealth Fund; London: Oxford University Press, 1941.

This collection of the papers of the late Dr. Wade Hampton Frost is a book which should and probably will find a permanent place in the library of every physician interested in public health. It offers a splendid example of the development of epidemiologic method and furnishes, in addition, perpetuation and convenient accessibility for some of the more significant investigations of this distinguished epidemiologist.

The collection is organized in five sections, preceded by an editor's preface and a biographic sketch of the author. Section one contains three papers, representing respectively studies of outbreaks of typhoid, septic sore throat and anterior poliomyelitis. Section two is devoted to stream pollution and water purification studies, including a review of the work of the United States Public Health Service in this field. In section three are included studies of endemic acute infectious diseases: influenza, common colds, acute minor respiratory infections in a group of Baltimore families, minor respiratory diseases observed during an influenza epidemic and a noninfluenzal period, and two studies on diphtheria. Section four includes an essay on the specialty of epidemiology, one on the familial aggregation of infectious disease, the rendering of accounts in public health, and one on authoritative standards in epidemiology. Section five takes up the study of infectious disease of long duration, including papers on familial contacts in pulmonary tuberculosis, age selection of mortality from tuberculosis in successive decades, and a philosophical paper entitled "How Much Control of Tuberculosis?"

The editor has chosen well in selecting these papers. The collection represents a diversity of problems and approaches, as well as an example of progress in epidemiologic method over a period of time. The papers themselves are worthy of intensive study, not only for methodology and the historical significance of facts presented, but for the painstaking quality of each investigation, logical organization and clear presentation, and keen but cautious reasoning in arriving at conclusions. The book is beautifully printed and made and is profusely illustrated with maps, graphs and tables. The original manuscripts have been modified only to the extent of correcting obvious printer's errors, and such corrections are properly identified. The tables and maps have been remade in the interest of uniformity. There is a complete bibliography of the author's papers, and a good index.

This book seems destined to become one of the classics in medical literature.

Spectrochemical Abstracts. Vol. II: 1938-1939. By Ernest H. S. van Someren, B.Sc. Cloth. Pp. 38. London: Adam Hilger, Limited, 1941.

Spectrochemical Abstracts should be present in every laboratory employing or interested in the application of spectrographic methods. One hundred and sixty-five literature abstracts are presented. The most valuable section gives reviews of ten books and reviews of abstracts, general papers, charts and labels which appeared during 1938 to 1939. The bibliographic material is arranged in two parts, part I giving authors and references and part II brief descriptions of contents and explaining methods and results obtained. The booklet is a continuation of the "Spectrochemical Abstracts 1936-1937" edited by Twyman. It is noteworthy that spectrographic methods are more and more applied in problems related to biology and medicine. The job of the "urine tester" has been passed to the

highly trained and skilled technician who identifies porphyrins and other substances in the urine with equal precision as when asked to examine a few strands of hair for arsenic. Murder cases are solved by identifying the copper content of the powder charge in the wounds. The quantitative nature of benzine poisoning and the identification of carcinogenic substances are equally well substantiated by spectrographic methods. In many instances these methods have replaced tedious, conservative chemical procedures. A physician involved in medicolegal consultation or one who finds time and energy to keep abreast with newer research developments will find reliable information on methods and equipment, including a correlation and integration of the application of spectrochemistry for his particular interest.

Arthritis and Allied Conditions. By Bernard I. Comroe, A.B., M.D., F.A.C.P., Instructor in Medicine, University of Pennsylvania, Philadelphia. Second edition. Cloth. Price, $9. Pp. 878, with 242 illustrations. Philadelphia: Lea & Febiger, 1941.

This edition contains new chapters, the most important being a discussion of the sulfonamides, including the best known compounds. More than forty original photographs have been added. Among the features of the book are the large number of summaries presented in box form which enable the general practitioner to visualize quickly the important information. The author has made a fine survey of the literature. He has given the general practitioner an outline of the subject of gold salts in the treatment of rheumatoid arthritis, physical therapy, vaccines, endocrine preparations and the large number of medical agents used in the treatment of this disease. He has added a summary of the value of vitamin E in fibrositis and the medical and roentgen ray management of spondylitis. He has made an attempt to evaluate the various controversial questions such as focal infection, vitamins, diet, backache, flat feet, arch supports and the sulfonamides. An "arthritic record" including history, consultations, laboratory results, diagnosis and therapy together with diagrams and the use of the Jansen ciphers is instructive. In the chapter on splinting of affected joints, the author says that there must be sufficient motion to prevent ankylosis and sufficient rest to permit healing. If this principle was adhered to, physicians and patients would be gratified by the good results obtained. In the discussion on massage in rheumatoid arthritis, the author states that "proper massage requires the assistance of one trained in this field." He correctly states that vaccines must be used only as a part of the general antiarthritic regimen. There are no short cuts to success in dealing with arthritis. One chapter concerns the role of allergy in arthritis. There are good chapters on roentgen diagnosis and roentgen therapy, another on rheumatic fever, and a fine description of gout and sciatica. The chapter on painful shoulders is excellent.

Outlines of Industrial Medical Practice. By Howard E. Collier, M.D., Ch.B. Cloth. Price, $5. Pp. 440. Baltimore: William Wood & Company, 1941.

The author divides "industrial medicine" into four main sections: industrial hygiene, industrial psychology, industrial discase and industrial forensic medicine. In the earlier chapters of the book the more strictly executive functions of the works doctor are described, while the latter portion deals with his advisory functions. It is most important that the distinction between executive duties and advisory functions of industrial physicians be clearly distinguished. The author's recognition of the importance of industrial psychology is demonstrated by the seven chapters devoted to this subject. Part four of the book deals with industrial medicine and gives satisfactory discussions of the various common diseases ascribed to occupation. Only one short chapter in the early part of the book deals with the care of the injured workman. The fact that the author has in this way deemphasized injuries and traumatic surgery illustrates his broad approach to the problems of industrial medical practice. The fifth part of the book is devoted to industrial forensic medicine and gives a review of the factories act of 1937, the public health act in 1936, and various compensation and allied acts bearing on the problems of labor. An extensive bibliography is appended. While this work is written from the point of view of the British industrial physician, it serves as a most satisfactory outline for those in America who are interested in the subject.

Études sur les amputations et désarticulations des membres. Par P. Huard, professeur d'anatomie et de médecine opératoire à l'École supérieure de médecine de l'Indochine. Paper. Pp. 686, with 285 illustrations. Paris: Masson & Cie; Hanoi: G. Taupin & Cie, 1940.

This volume includes a study of amputations and disarticulations of the extremities. The author is one of the leading authorities of France, who has been a student under the greatest French surgeons. He was professor of anatomy and operative surgery at the School of Medicine in Indo-China. He was one of the leading surgeons of the colonial service of France. He was a student of the famous Broca. The book comes from Hanoi, French Indo-China, and represents the latest point of view of the French school of operative surgery. In the first part the author provides the physiopathologic considerations of normal amputation. The second chapter includes general indications for the larger amputations and disarticulations of the extremities. The third chapter contains the technic of the larger amputations and disarticulations of the members. Another chapter discusses the generalizations or rules concerning prostheses following amputations. In the second part of the book are amputations and disarticulations of the upper extremities, extending from the fingers to the interscapulothoracic disarticulation, giving the indications, technic of operation, the follow-up care and the end results. The third part contains a discussion of amputations and disarticulations of the lower extremities. The rare type of interilioabdominal disarticulation is described and illustrated. The author states that the war interrupted his writing of the book and that he had to complete it more rapidly than he had anticipated. A voluminous bibliography is included. The rare type of interilioabdominal disarticulation is described fully and illustrated profusely.

Approved Laboratory Technic: Clinical, Pathological, Bacteriological, Mycological, Parasitological, Serological, Biochemical and Histological. By John A. Kolmer, M.S., M.D., Dr.P.H., Professor of Medicine, Temple University, Philadelphia, and Fred Boerner, V.M.D., Assistant Professor of Bacteriology, School of Medicine and Graduate School of Medicine, University of Pennsylvania, Philadelphia. Third edition. Cloth. Price, $8. Pp. 921, with 380 illustrations. New York & London: D. Appleton-Century Company, Incorporated, 1941.

This book is devoted to describing the technic of methods for the performance of various and numerous laboratory examinations. While the authors selected the particular methods described, the description of the technic of each method has been definitely approved also by at least five members of the American Society of Clinical Pathologists. The descriptions are full and detailed, in some cases even the simplest of details being given in order to insure greater accuracy and uniformity in results. This field of medicine is advancing so rapidly that a new edition has been considered necessary three years after the previous edition was published. Among the new methods included in this edition are those for the determination for vitamin C in urine and plasma, those for the determination of sulfonamide compounds in the blood and urine, for the determination of thiocyanates in the blood, the Eagle modification of the Wassermann test, the technic of the simplified Kolmer complement fixation test for syphilis, Sparkman's method for the determination of urobilinogen in the urine and feces as a test for liver function, Quick's method for the estimation of hippuric acid in the urine as a liver function test, methods for the examination of semen, and Quick's method for the quantitative determination of prothrombin. A book on this order would seem to be almost indispensable to students, practitioners and others who are engaged in the laboratory diagnostic field.

Modern Drugs in General Practice. By Ethel Browning, M.D., Ch.B. Cloth. Price $3. Pp. 236. Baltimore: William Wood & Company, 1940.

The author believes that there is need for a book which presents necessary information in compact form about the value, availability, correct application and potential danger of new drugs. She lists such drugs under the headings of sulfanilamides, gold salts, cardiac drugs, drugs acting on the autonomic system, sedatives and hypnotics, diuretics and antiseptics, gastrointestinal remedies including anthelmintics, external applications including antiseptics, disinfectants and local antiseptics. She regrets that there is not in Great Britain any official body cor-

responding to the Council on Pharmacy and Chemistry of the American Medical Association, and her work to some extent fulfils this lack. The application to clinical medicine of the sulfonamide group represents the greatest advance in the treatment of bacterial infection since Ehrlich's discovery of arsphenamine in 1904. She gives details for the administration of these, including diets low in sulfur. This is because these drugs may cause sulfhemoglobinemia. Gold therapy, she says, has been more popular on the continent than in England, and more popular in England than in America. While not enthusiastic about its use, she gives the latest methods of how it is best used. The important cardiac drugs are briefly treated, with the clinical essentials. A summary of the clinical use of drugs acting on the autonomic nervous system, and also sedatives and hypnotics, is given. The chief advance in the therapy of gastrointestinal disturbances, the author says, lies perhaps in the substitution of new "antacids" for the old alkalis. She includes in this especially the use of aluminum hydroxide and magnesium trisilicate. Anthelmintics are treated succinctly yet adequately. The use of antiseptics is given briefly. This small book shows a practical knowledge of the drugs discussed and gives in compact form and clear language the methods of using them. References to the important literature on which the recommendations are based are given.

Prostatectomía por via perineal. Por Armando Mendez. Tesis para optar al título de doctor en medicina, Universidad nacional de Buenos Aires, Facultad de ciencias médicas. Paper. Pp. 129, with 76 illustrations. Buenos Aires: Imprenta Mercatali, 1940.

This review of perineal prostatectomy gives an exhaustive description of the anatomy of the perineum, paying particular attention to the muscular and fascial planes in relation to the blood supply of the prostate. In addition to the ordinary descriptive text, important anatomic points are brought out by an excellent series of diagrams which illuminate the important surgical relations. The exact details of perineal prostatectomy are limited to the surgically open dissecting anatomic methods first developed by Proust in France and by Young in the United States. This technic is minutely described and illustrated. The author gives an excellent description of the Wildbolz method of repair of the posterior urethra after removal of the prostate. He also describes the avascular prostatic approach of Gill Vernet, but he does not mention the early American methods of perineal prostatectomy using a midline incision and a blind enucleation of the tumor with the educated finger. As advantages of perineal prostatectomy are presented, first, that it is easier to remove the prostate completely by this route; second, that the convalescence is shorter; third, that there is better drainage; fourth, that the mortality is lessened and, fifth, that less hemorrhage results because of the open surgery. As disadvantages there are mentioned, first, that perineal prostatectomy demands a very exacting technic, and, second, that rectal fistula, urinary fistula, incontinence of urine and impotence occur much more frequently than after suprapubic operation.

Medicine. By Dwight O'Hara, M.D., F.A.C.P., Professor of Preventive Medicine, Tufts College Medical School, Boston. Vocational and Professional Monographs No. 4. Paper. Price, 50 cents. Pp. 28. Boston: Bellman Publishing Company, Inc., [n. d.].

This monograph is designed to supply fundamental information to those who are considering entering a medical school or engaging in the practice of medicine. The author is qualified to express opinions in view of having taught at Harvard, Boston University and Tufts College Medical School and of being president of the Middlesex South District Medical Society in Massachusetts and a member of the House of Delegates of the American Medical Association. The monograph contains twenty-four small sections, some of which are named "The Choice of a College" and "The Choice of a Medical School." He lists the recognized medical schools and gives brief data concerning each one. Other sections pertain to the personal qualifications required for engaging in medical work, the chances for advancement, the advantages and disadvantages of the work, general practice and specialization. This discussion will broaden the point of view of premedical students, especially, and help them to make their decision.

Scabies—Civil and Military: Its Prevalence, Prevention and Treatment. By Reuben Friedman, M.D., Assistant Professor of Dermatology and Syphilology, Temple University School of Medicine, Philadelphia. Cloth. Price, $3. Pp. 288. New York: Froben Press, 1941.

This book by Friedman, who wrote also "The Emperor's Itch," is an especially timely contribution, since "the incidence of scabies inevitably rises during and immediately after war." Military experience indicates that approximately ten days are required for the care of a case of scabies, so that the problem might well assume serious proportions now that we are approaching full mobilization. Every phase of scabies is considered in this book—its history, clinical picture, incidence, treatment and public health aspects. Of unusual and particular interest are the chapters dealing with the historical phases of the disease. One of the most significant documents in the history of disease, Bonomo's letter to Redi, is reproduced, and historical references are directed not alone to the nature of the disease but also to its treatment. The chapter on treatment is brought down to date. Every method that has been recommended is critically considered and described in detail with the conclusion that no one remedy can be invariably successful and, not infrequently, one has finally to resort to good old fashioned sulfur ointment. Altogether the monograph is an excellent source book full of interesting and useful information. Had the book contained some photographic illustrations and an academic chapter devoted to the diagnosis and differential diagnosis of scabies its value might have been enhanced. The book is well indexed, is profuse in footnotes and contains an extensive bibliography.

Notes on Diffuse Sclerosis, Diffuse Gliomatosis and Diffuse Glioblastomatosis of the Brain with a Report of Two Cases. By Lárus Einarson, Professor of Anatomy, University of Aarhus, Aarhus, and Axel V. Neel, Pathologist to the Psychiatric Laboratory, University of Copenhagen, Copenhagen. Acta Jutlandica Aarsskrift for Aarhus Universitet XII,s. Paper. Price, 2.50 Danish kroner. Pp. 56, with 25 illustrations. Aarhus: Universitetsforlaget; Copenhagen: Ejnar Munksgaard, 1940.

This is a short monograph on the relationship of diffuse sclerosis, diffuse gliomatosis and diffuse glioblastomatosis. The authors report two cases pertinent to the problem of the existence of a glioblastomatous transition form of a diffuse sclerosis. It is their opinion that such is a possibility; that is, that diffuse glioblastomatosis may result from diffuse sclerosis and gliomatosis. There is a good classification of the demyelinizing diseases. There is a fairly good bibliography. This monograph is recommended to neuropathologists.

Food Analysis: Typical Methods and the Interpretation of Results. By A. G. Woodman. International Chemical Series. Louis P. Hammett, Ph.D., Consulting Editor. Fourth edition. Cloth. Price, $4. Pp. 607, with 132 illustrations. New York & London: McGraw-Hill Book Company, Inc., 1941.

This widely used textbook contains much additional material in the new edition, but it remains a book of essentials for students and beginners rather than a handbook for experts. There is no discussion of methods of analysis for calcium, iron or iodine. There is no description of methods for the determination of lead in foods. Vitamins, several of which now can be determined with reasonable accuracy by biochemical and physical methods, are not even mentioned. The material contained in the book is basic, however, and it is presented systematically and clearly.

Meat for Millions. Report of the New York State Trichinosis Commission. State of New York Legislative Document (1941) No. 52. Paper. Pp. 282, with 16 illustrations. Albany: Fort Orange Press, Inc., Printers, 1941.

This book provides a history of activities of the New York Trichinosis Commission. As a result of its deliberations a number of recommendations were made regarding the feeding of hogs, the handling of pork products, meat inspection and miscellaneous items, all designed to protect the public from infested meat.

Archiv und Atlas der normalen und pathologischen Anatomie in typischen Röntgenbildern. Die Differentialdiagnose der Wirbelsäulentuberkulose. Von Priv.-Doz. Dr. J. E. W. Brocher. Fortschritte auf dem Gebiete der Röntgenstrahlen, Ergänzungsband LX. Herausgeber: Prof. Dr. Grashey. Cloth. Price, 16.20 marks. Pp. 88, with 129 illustrations. Leipzig: Georg Thieme, 1941.

This is a beautiful atlas of 129 illustrations, chiefly roentgenograms that are highly instructive and beautifully reproduced, evidently taken from one of the leading journals of roentgenology of Germany.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

REVACCINATION AGAINST TYPHOID

To the Editor:—I have encountered a variety of conflicting recommendations with regard to revaccination against typhoid and paratyphoid at the expiration of the two to three year period of relative immunity produced by the first vaccination. Some advise the administration of the original 2,500 million organisms in divided doses; some advise the administration of only a fraction of this amount; Siler (*Am. J. Pub. Health* **29**: 95 [Feb.] 1939) recommended a single intracutaneous injection of 0.1 cc. of vaccine. The latter certainly has the merit of convenience, but public health officials and bacteriologists whom I have consulted seem uncertain as to its reliability. Can you tell me what is the approved method of repeated revaccination and how frequently it should be performed?

M.D., Massachusetts.

ANSWER.—Experimental evidence (titration of the serums of revaccinated individuals by means of the mouse protection test) indicates that the administration of a single dose of 0.1 cc. of typhoid vaccine (100 million organisms) intracutaneously is a reliable method of renewing protection. The titrations obtained by this method average approximately as high as those obtained following revaccination by the usual three dose course of typhoid vaccine given subcutaneously. The small single dose method is now being used for revaccination by several health agencies. Revaccination should be repeated at not less than two year intervals, while a one year interval is preferred.

CARBON TETRACHLORIDE POISONING AND MUSCULAR ATROPHY

To the Editor:—Three employees of a dry cleaning establishment showed unmistakable evidence of carbon tetrachloride poisoning from a carbon tetrachloride machine before an adequate ventilating system was installed. Two of the employees have recovered completely. The other employee has developed a classic case of spinal muscular atrophy. A careful neurologic examination showed no sensory disturbance whatever. Two examinations of the spinal fluid showed it to be normal in every respect. The diagnosis was first made in my office and was later confirmed by a competent neurologist in another city. From all the evidence that I have been able to gather, this man was perfectly well before his exposure to carbon tetrachloride. In the literature that is available to me I have been unable to find reports of patients exhibiting similar neurologic lesions following exposure to carbon tetrachloride. Evidence suggesting that such cases are a possibility is provided in the report of Smyth, Smyth, and Carpenter in the Journal of Industrial Hygiene and Toxicology for May, 1936, in which they state that degenerative changes were found in the sciatic nerves of experimental animals exposed to carbon tetrachloride. Any information that you can give me concerning the possibility of this man's condition being the result of his exposure to carbon tetrachloride will be appreciated.

W. M. Kinney, M.D., Joplin, Mo.

ANSWER.—In speaking of progressive spinal muscular atrophy Osler, in Modern Medicine (Philadelphia, Lea & Febiger, 1910, vol. 7, p. 84) says "It is exceedingly questionable whether infections or intoxications cause the symptoms although the development of progressive muscular atrophy many years after an arrested acute poliomyelitis is regarded by Léri as evidence of this origin. Some toxic substances acting on the cells weakened by acute poliomyelitis may cause progressive muscular atrophy." The only probable agent mentioned is lead.

In view of the fact that changes in the optic nerve and the sciatic nerve have been observed in some rats and monkeys after prolonged exposure to high concentrations of carbon tetrachloride, which changes persisted after recovery from other effects, one cannot exclude the possibility of chronic nerve damage, though no records of such cases in man have been found.

André Domart, in the most recent comprehensive paper on carbon tetrachloride (Nephritis par inhalation de tetrachlorure de carbone, thesis, Paris, Presses modernes, 1938) speaks of nervous forms with polyneuritis following the development of a hepatorenal type of poisoning, but his list of cases does not include any such case as the one mentioned.

If all other possible causes can be excluded and symptoms and signs persist, one cannot exclude the possibility of carbon tetrachloride exposure being the exciting cause, although this would be extremely unusual.

POSSIBLE MILKER'S NODULES

To the Editor:—Three years ago a young single woman spent her vacation on a farm and, while milking a cow, scratched the palm of her hand with her fingernail. The next few days she noticed a blister over this area of the palm of the hand which formed an ulcer the size of a quarter (24 mm.) and was moderately painful and would not heal readily. Her other hand also became ulcerated, although to a lesser degree. She was not acutely ill and was under a physician's care for three months. Numerous cultures and blood tests were taken with no informative results. Finally, roentgen rays were used, and, after several treatments, the ulcer of the palm healed with only a slight scar. Since then she has occasionally noticed soreness and pain about the axilla and breast on the same side. She has also noticed a tender lump in the breast the size of a small marble at such times. On about five occasions in the past three years she has felt "out of sorts" but not actually sick, and this condition would clear up by the eruption of symmetrical bluish red blotches on the palm of the hands and outer aspect of the soles of the feet. The only subjective symptoms would be the burning of the hands and feet and soreness of the outer aspect of the breast with definite nodules resembling a "caked" breast. This would involve only the breast on the same side as the original ulcerous lesion of the palm of the hand. The patient has no fever or axillary adenitis, the blood count is normal, and there is no other evidence of a cutaneous lesion except acne of the face. In summary, the salient points are as follows: 1. History of ulcer of palm of hand three years ago; persisted three months; responded to roentgen ray treatment. 2. Symmetrical eruption of the palms and the outer aspect of the feet; lasts about one week; preceded by malaise; subjective symptom burning, blotchy red in character and not raised. 3. Lumpy, tender breast on the side of the primary lesion of the hand with soreness and tenderness along the outer border of the pectoral muscles. I should like an opinion as to diagnosis or further work-up.

M.D., Illinois.

[This question has been referred to a surgeon and to a dermatologist, whose replies follow.]

ANSWER.—Two possibilities suggest themselves with reference to this case: first, infection of the open wound of the hand with cow hair and subsequent involvement of the axilla and breast with cow hair infection; second, the development of so-called milkers' nodules. The latter seems the more unlikely because of the absence of the characteristic lesions on the hand which are usually seen. Both of these conditions, however, are so uncommon that possible variations in the clinical picture may not be well recognized.

The only suggestion one could make as to further study would be an excision of the nodule in the breast and careful pathologic and bacteriologic study of the tissue removed. One would be reluctant, however, to advise such excision if there is diffuse involvement of breast tissue. As it is worded, the query makes it difficult to visualize the condition of the breast, for the writer first mentions a tender lump in the breast the size of a small marble and subsequently definite nodules resembling a "caked" breast.

ANSWER.—A blister on the palm developing a few days after an injury of this part during milking and followed by ulcers of both palms, suggests a milkers' nodule infection. Jenner knew this disease in 1799 and called it "false cowpox," and it has been frequently reported and studied in Europe; but the first American report was made recently by F. T. Becker (Milkers' Nodules, THE JOURNAL, Dec. 21, 1940, p. 2140). The sterility of cultures and the earlier healing of the second ulcer (implied in the failure to mention it again) as well as the mildness of the symptoms would be in agreement with this theory. The persistence of the primary ulcer is against this, for the lesions of milkers' nodules are self limited and followed by an immunity. The disease causes a granulomatous reaction in the skin, however, and this may have been accentuated by local irritation.

The recurrent attacks of malaise followed by a macular eruption on the palms and soles may be a toxic erythema of the multiform type. The generally held idea of this disease is that it is due to toxins or showers of organisms released from a focus of infection which has undergone an exacerbation. Keil (Erythema Multiforme Exsudativum [Hebra]: A Clinical Entity Associated with Systemic Features, *Ann. Int. Med.* **14**:449 [Sept.] 1940) excludes from this disease the toxic eruptions due to gonococcic infection, rheumatic fever and lupus erythematosus and thinks that true erythema multiforme is an entity. He doubts the likelihood of a tuberculous or streptococcus etiology and favors the idea that it is another of the virus diseases. In support of this theory he mentions epidemics of erythema multiforme simultaneously with epidemics of herpes zoster. He quotes Urbach's series of 20 cases in which herpes labialis preceded the eruption of erythema multiforme by eight days. The sequence of milkers' nodules and erythema multiforme, assumed in the case under discussion, fits this theory. The tenderness in the axilla and breast on the side of the original ulcer, with a small lump during the exacerbation of erythema, suggests a possible focus in this region.

Unless accurate causation can be established, the treatment should be symptomatic.

PSYCHOMOTOR EPILEPTIC ATTACKS

To the Editor:—A man aged 42, an attorney, was in an automobile accident in September 1933. He was unconscious for five or ten minutes. His head was hit, as he states that his cheek was sutured for a minor laceration (three sutures). One month after the injury a discharge from the ear began and two months after the accident he had a grand mal attack (the first in his life). The ear condition (which also had never been noted before by the patient) was diagnosed as a chronic suppurative otitis media, with necrosis of bone. It has been treated conservatively; the discharge subsided completely in two or three years, has never recurred and does not bother him. He visits an otologist once or twice a year, and the perforation and necrosis persist, though he is symptom free. After the first convulsion he was thoroughly studied, although an encephalogram has never been done. A roentgenogram of the involved mastoid was reported as "dense and sclerotic." A spinal fluid Wassermann (and blood Wassermann) test, blood chemistry, urine, blood count and roentgenogram of the skull were all normal. Since the first convulsion he has had a total of twelve attacks, all nocturnal, at intervals varying from the shortest of one month to the longest of twenty-five months. Each attack has been followed by violent retching and emesis; some attacks have been followed by profuse catharsis; most attacks were typical, but some were in the form of sleepwalking. He has been under my care for about a year. Till then he had taken no medication. I put him on phenobarbital, 0.1 Gm. at bedtime. Since then the last attack occurred, in November 1940; I then advised him to increase the phenobarbital to 2 grains (0.13 Gm.) at bedtime. There have been no attacks since. Now since he has been reading the literature, he would like to change to phenytoin sodium. I am reluctant to recommend this, in view of the infrequency of the attacks. He admits that it is only occasionally that he feels "sleepy" or "dopy" in the daytime. Would you advise a change to phenytoin? Is its value as unquestionably superior to phenobarbital as the literature states? If I did recommend the change, I was thinking of doing it this way: for the first week, 1½ grains (0.1 Gm.) of phenobarbital and ½ grain (0.03 Gm.) of dilantin; the second week, 1 grain (0.06 Gm.) of each; the third week, ½ grain of phenobarbital and 1½ grains of phenytoin and after that 2 grains of phenytoin. Do you approve of this method? Your advice will be greatly appreciated; also any comments on the case in general or other therapy.

M.D., New York.

Answer.—Phenytoin is unquestionably superior to phenobarbital, especially in the treatment of psychomotor epileptic attacks. It is often necessary to combine it with small doses of phenobarbital in the treatment of grand mal attacks. It is least successful in petit mal. In a case such as that described, 0.1 Gm. of phenytoin twice a day, morning and night, would be advisable. The addition of 0.016 Gm. of phenobarbital at night is recommended. Owing to the infrequency of the attacks and their fairly adequate control with phenobarbital, there is no necessity for changing to phenytoin. The change, however, might be worth while. Gradual diminution of the phenobarbital is distinctly advisable in changing to phenytoin.

Because of the history of trauma and later of mastoid infection, a pneumoencephalogram might reveal a focal lesion, the removal of which might be beneficial. Any localizing phenomena in the seizures would indicate such a procedure.

KERATOCONJUNCTIVITIS SICCA

To the Editor:—A white woman aged 50 came to the hospital complaining of a white thick secretion in both eyes, which gradually works around over the cornea and feels like a foreign body. Apparently it is secreted by the glands of the lids. It is tenacious and white. A smear showed only strings of mucus. Culture at this time showed Staphylococcus albus; the patient says that five years ago a culture showed streptococci. Together with this she also has a secretion from the parotid gland which she squeezes out through the duct. A smear of this shows polymorphonuclear leukocytes and gram positive diplococci with occasional short chains. The condition of the parotid gland does not cause any trouble.

Raymond H. Goodale, M.D., Worcester, Mass.

Answer.—From the description, one can be almost certain that the patient has keratoconjunctivitis sicca. This is due to atrophy of the lacrimal glands and is accompanied by atrophy of the salivary glands. The secretion is chiefly desquamated epithelial cells, which appear so when the lacrimal secretion is deficient. The Schirmer test would determine the lacrimal function. Strips of Whatman number 41 filter paper 5 mm. wide and 35 mm. long are cut. The upper 5 mm. is folded so as to hook over the lower lid at the junction of the outer and middle thirds. If less than 15 mm. of the paper is moistened after five minutes, a deficiency is present. Treatment is by affording a substitute for tears. Locke's solution to which is added 4 grains (0.26 Gm.) of gelatin and 3 grains (0.2 Gm.) of chlorobutanol per ounce is satisfactory and should be dropped in the eyes six to eight times a day to the exclusion of all other antiseptics.

If less than 5 mm. of the paper is moistened, it is safe to close all the tear points with the diathermy needle. This allows all the tears to remain in the conjunctival sac and affords great relief. Secretion of the glands may in a few cases be stimulated by small doses of prostigmine bromide by mouth.

PROLAPSE OF THE RECTUM IN THE ELDERLY

To the Editor:—Please inform me regarding the newest treatment of rectal prolapse. The patient is 70 years old.

M.D., New York.

Answer.—Prolapse of the rectum in older persons may be of two types. The mucosal type of prolapse, in which the lower portion of the bowel protrudes at stool, can be treated effectively by segmental removal of four or five of the most prominent areas prolapsing. This leaves longitudinal scars which support the bowel and give most patients practically complete relief. The other type of prolapse is one in which the whole lower segment everts, coming out as large as an adult fist. This includes all layers of the bowel. This requires an operative management known as the Rehm Delorme procedure, which involves the removal of the mucosa of the prolapsing segment and the plication of the muscularis of the bowel and a narrowing of the sphincter muscles. This is depicted in Lewis's or Nelson's Surgery. In patients with a prolapse of 6 inches to a foot of bowel, an abdominal operation is necessary, which includes obliteration of the cul-de-sac of Douglas and attachment of the prolapsing segment of bowel to the tendon of the psoas minor muscle.

THE "THREE DYE" TREATMENT OF BURNS

To the Editor:—What is the value of the "three dye" treatment of burns, described by Devine (1 per cent gentian violet, 1 per cent brilliant green and 0.1 per cent acriflavine base)? Is this method as good as or is it better than the usual tannic acid treatment.

Leopold Schwartz, M.D., Wildwood, N. J.

Answer.—The advantages claimed for the "three dye" treatment are its antiseptic action against both gram-positive and gram-negative organisms, the relief of pain, and the rapid formation of an eschar. It is difficult, if not impossible, to evaluate satisfactorily by the statistical method the claims made for various treatments of burns. It must be remembered in the treatment of any burn of severe degree that the local lesion is only part, although an important part, of the clinical picture and that in the early stages the treatment of the patient's general condition takes precedence over any special treatment of the wound beyond its protection by sterile covers. As an emergency, and particularly in the treatment of small and minor burns, the three dye method has much to recommend it, particularly the cheapness and stability of the solution.

AUTOAGGLUTINATION OF RED CELLS

To the Editor:—A patient with pernicious anemia has agglutination of the erythrocytes when I try to do an erythrocyte count, thus giving an inaccurate count. Could you suggest the reason and remedy for this?

Earl D. Cumming, M.D., East Cleveland, Ohio.

Answer.—Since agglutination of the red cells is rare in pernicious anemia, its occurrence in this case should make one question the correctness of the diagnosis. Three other conditions should be suspected: hemolytic anemia, multiple myeloma and leukemia. In hemolytic anemia the presence of an autoagglutinin may be the cause of this phenomenon. Occasionally a macrocytic blood picture may be present which simulates pernicious anemia. The diagnosis should be confirmed by a red cell fragility test. In multiple myelomia and leukemia, agglutination of the red cells is often produced by an increase in the globulin content of the blood. These conditions must be ruled out by further study of the blood smears and sternal marrow.

If the diagnosis of pernicious anemia is correct and has been confirmed by a favorable response to liver therapy, the cause of the agglutination is probably the presence of an autoagglutinin. An attempt to eliminate the autoagglutination should be made by using other diluting fluids, such as physiologic solution of sodium chloride or 3 per cent sodium citrate. Since cold increases the tendency to agglutination, the blood count should be made at body temperature by warming the pipets and the diluting fluids.

PORT WINE NEVUS

To the Editor:—In The Journal, August 9, page 496, in answer to a question concerning the treatment of a port wine nevus, it is said that there is no satisfactory method of treatment. It is now known that in small localized port wine nevi reasonably satisfactory results can be obtained with large but safe doses of grenz ray. The case discussed in the August 9 issue undoubtedly could not be treated satisfactorily, but I think it should be mentioned that in the smaller type of lesion a satisfactory result can now be secured.

Cleveland J. White, M.D., Chicago.